DICOM Conformance Statement

Product Name: ACUSON Bonsai™
Ultrasound System
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SIEMENS Healthineers

1 CONFORMANCE STATEMENT OVERVIEW

This document describes the conformance to the ACR-NEMA DICOM 3.0 Standard by the ultrasound system of ACUSON Bonsai™. We specify ultrasound system generally refer to the products above in this document. The ultrasound system implements the necessary DICOM services to download worklists from an information system, save acquired Ultrasound (US) images and associated Structured Reports to a network storage device and/or removable media, print to a networked hardcopy device, query and retrieve the US images from a networked storage system, and inform the information system about the works actually done. Table 1 provides an overview of the supported network services, Table 2 lists the supported Media Storage Application Profiles, and Table 3 lists the supported Structured Report Templates.

The **ACUSON Bonsai™ Ultrasound System** supports the following DICOM Application Entities:

Table 1
NETWORK SERVICES

SOP Classes	**User of Service (SCU)**	**Provider of Service (SCP)**
Transfer（Storage）		
Verification	Yes	Yes
Ultrasound Image Storage	Yes	Yes
Ultrasound Multi-frame Image Storage	Yes	Yes
Secondary Capture Image Storage	Yes	Yes
Encapsulated PDF Storage	Yes	Yes
Raw Data Storage	Yes	Yes
Enhanced US Volume Storage	Yes	No
Query/Retrieve		
Study Root Query/Retrieve Information Model – FIND	Yes	No
Study Root Query/Retrieve Information Model – MOVE	Yes	No

SOP Classes	User of Service (SCU)	Provider of Service (SCP)
Workflow Management		
Modality Worklist Information Model – Find	Yes	No
Modality Performed Procedure Step	Yes	No
Storage Commitment Push Model	Yes	No
Print Management		
Basic Color Print Management	Yes	No
Basic Grayscale Print Management	Yes	No
Notes, Reports, Measurements, Transfer		
Comprehensive SR Storage	Yes	Yes

Table 2
MEDIA SERVICES

Media Storage Application Profile	Write Files (FSC / FSU)	Read Files (FSR)
Compact Disk - Recordable		
STD-US-SC-SF&MF-CDR	Yes / Yes[1]	Yes
DVD		
STD-US-SC-SF&MF-DVD STD-US-SC-SF&MF-DVD-RAM	Yes / Yes[1]	Yes
USB Devices		
STD-GEN-USB-JPEG for Ultrasound images, Structured Reports and Encapsulated PDF Storage	Yes / Yes[1]	Yes

Note:
1 Only acts as a FSU for media that may be written to multiple times.

Table 3
STRUCTURED REPORTS

Concept Name	Supported
Echocardiography Procedure Report	Yes
Vascular Ultrasound Report	Yes

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3 INTRODUCTION

3.1 Audience

This document is intended for potential customers, system integrators of medical equipment, marketing staff interested in system functionality and software designers implementing DICOM interfaces. It is assumed that the readers of this document are familiar with the DICOM Standard and with the terminology and concept which are used in the Standard. If readers are unfamiliar with DICOM terminology they should read the DICOM Standard, prior to reading this DICOM Conformance Statement document.

3.2 Remarks

The scope of this DICOM Conformance Statement is to facilitate integration between SIEMENS Products and other DICOM products. The Conformance Statement should be read and understood in conjunction with the DICOM Standard. DICOM by itself does not guarantee interoperability. The Conformance Statement does, however, facilitate a first-level comparison for interoperability between different applications supporting compatible DICOM functionality.

This Conformance Statement is not supposed to replace validation with other DICOM equipment to ensure proper exchange of intended information. In fact, the user should be aware of the following important issues:

- The comparison of different Conformance Statements is the first step towards assessing interconnectivity and interoperability between SIEMENS medical equipment and other DICOM conformant equipments.
- Test procedures should be defined and executed to validate the required level of interoperability with specific compatible DICOM equipment, as established by the healthcare facility.
- The DICOM standard will evolve to meet the user's growing requirements. SIEMENS is actively involved in the development of the DICOM standard. Therefore, SIEMENS reserves the right to make changes to its products or to discontinue its delivery.

The Ultrasound System follows the IHE SWF, PDI, ED Profiles.

3.3 Terms and Definitions

Abstract Syntax – the information agreed to be exchanged between applications, generally equivalent to a Service/Object Pair (SOP) Class. Examples: Verification SOP Class, Modality Worklist Information Model Find SOP Class, Computed Radiography Image Storage SOP Class.

Application Context – the specification of the type of communication used between *Application Entities*. Example: DICOM network protocol.

Application Entity (AE) – an end point of a DICOM information exchange, including the DICOM network or media interface software; i.e., the software that sends or receives DICOM information objects or messages. A single device may have multiple Application Entities.

Application Entity Title – the externally known name of an *Application Entity*, used to identify a DICOM application to other DICOM applications on the network. The Called AE Title defines the intended receiver of an Association. Nevertheless, the Calling AE Title defines the requestor of an Association.

Application Profile - A Media Storage Application Profile defines a selection of choices at the various layers of the DICOM Media Storage Model which are applicable to a specific need or context in which the media interchange is intended to be performed.

Association – a network communication channel set up between *Application Entities*.

Association Establishment - an Association Establishment is the first phase of communication between two DICOM Application Entities. The AEs use the Association Establishment to negotiate how data will be encoded and the type of data to be exchanged.

Attribute – a unit of information in an object definition; a data element identified by a *tag*. The information may be a complex data structure (Sequence), itself composed of lower level data elements. Examples: Patient ID (0010,0020), Accession Number (0008,0050), Photometric Interpretation (0028,0004), Procedure Code Sequence (0008,1032).

DICOM File Format - the DICOM File Format provides a means to encapsulate in a File the Data Set representing a SOP Instance related to a DICOM Information Object.

DICOM Message Service Element (DIMSE) – a DIMSE defines the services and protocols utilized by an Application Entity to exchange messages.

File - a File is an ordered string of zero or more bytes, where the first byte is at the beginning of the file and the last byte is at the end of the File. Files are identified by an unique File ID and may by written, read, or deleted.

File Meta Information - the File Meta Information includes identifying information on the encapsulated Data Set. It is a mandatory header at the beginning of every DICOM File.

Information Object Definition (IOD) - the specified set of *Attributes* that comprise a type of data object; does not represent a specific instance of the data object, but rather a class of similar data objects that have the same properties. The *Attributes* may be specified as Mandatory (Type 1), Required but possibly unknown (Type 2), or Optional (Type 3), and there may be conditions associated with the use of an Attribute (Types 1C and 2C). Examples: Print Job IOD.

Joint Photographic Experts Group (JPEG) – a set of standardized image compression techniques, available for use by DICOM applications.

Module – a set of *Attributes* within an *Information Object Definition* that are logically related to each other. Example: Patient Module includes Patient Name, Patient ID, Patient Birth Date, and Patient Sex.

Negotiation – first phase of *Association* establishment that allows *Application Entities* to agree on the types of data to be exchanged and how that data will be encoded.

Physical Media - a piece of material with recording capabilities for streams of bits. Characteristics of a Physical Media include form factor, mechanical characteristics, recording properties and rules for recording and organizing bit streams in accessible structures.

Presentation Context – the set of DICOM network services used over an *Association*, as negotiated between *Application Entities*; includes *Abstract Syntaxes* and *Transfer Syntaxes*.

Protocol Data Unit (PDU) – a packet (piece) of a DICOM message sent across the network. Devices must specify the maximum size packet they can receive for DICOM messages.

Security Profile – a set of mechanisms, such as encryption, user authentication, or digital signatures, used by an *Application Entity* to ensure confidentiality, integrity, and/or availability of exchanged DICOM data

Service Class Provider (SCP) – role of an *Application Entity* that provides a DICOM network service;

typically, a server that performs operations requested by another *Application Entity* (*Service Class User*). Examples: Picture Archiving and Communication System (image storage SCP, and image query/retrieve SCP), Radiology Information System (modality worklist SCP).

Service Class User (SCU) – role of an *Application Entity* that uses a DICOM network service; typically, a client. Examples: imaging modality (image storage SCU, and modality worklist SCU), imaging workstation (image query/retrieve SCU)

Service/Object Pair (SOP) Class – the specification of the network or media transfer (service) of a particular type of data (object); the fundamental unit of DICOM interoperability specification. Examples: Ultrasound Image Storage Service, Basic Grayscale Print Management.

Service/Object Pair (SOP) Instance – an information object; a specific occurrence of information exchanged in a *SOP Class*. Examples: a specific x-ray image.

Tag – a 32-bit identifier for a data element, represented as a pair of four digit hexadecimal numbers, the "group" and the "element". If the "group" number is odd, the tag is for a private (manufacturer-specific) data element. Examples: (0010,0020) [Patient ID], (07FE,0010) [Pixel Data], (0019,0210) [private data element]

Transfer Syntax – the encoding used for exchange of DICOM information objects and messages. Examples: *JPEG* compressed (images), little endian explicit value representation.

Unique Identifier (UID) – a globally unique "dotted decimal" string that identifies a specific object or a class of objects; an ISO-8824 Object Identifier. Examples: Study Instance UID, SOP Class UID, SOP Instance UID.

Value Representation (VR) – the format type of an individual DICOM data element, such as text, an integer, a person's name, or a code. DICOM information objects can be transmitted with either explicit identification of the type of each data element (Explicit VR), or without explicit identification (Implicit VR); with Implicit VR, the receiving application must use a DICOM data dictionary to look up the format of each data element.

3.4 Acronyms, Abbreviations, and Symbols

The following acronyms and abbreviations are used in this document.

ACR	American College of Radiology
AE	Application Entity
CDR	Compact Disk Recordable
DICOM	Digital Imaging and Communications in Medicine
DIMSE	DICOM Message Service Element
DIMSE-C	DICOM Message Service Element-Composite
FSC	File-Set Creator
FSR	File-Set Reader
FSU	File-Set Updater
HIS	Hospital Information System
IHE	Integrating the Healthcare Enterprise
IOD	Information Object Definition

ISO	International Standard Organization
JPEG	Joint Photographic Experts Group
MODALITY	Ultrasound System
MPPS	Modality Performed Procedure Step
MWL	Modality Worklist
NEMA	National Electrical Manufacturers Association
O	Optional (Key Attribute)
PACS	Picture Archiving and Communication System
PDU	Protocol Data Unit
R	Required (Key Attribute)
RIS	Radiology Information System
SCP	Service Class Provider
SCU	Service Class User
SOP	Service Object Pair
SR	Structured Reporting
TCP/IP	Transmission Control Protocol/Internet Protocol
U	Unique (Key Attribute)
UL	Upper Layer
VR	Value Representation
US	Ultrasound
UID	Unique Identifier

3.5 References

DICOM® Standards Publication, PS 3.1 – PS 3.18, © NEMA. The DICOM Standard is under continuous maintenance. The current official version is available at www.dicomstandard.org.

IHE Technical Framework, available free at http://www.ihe.net/

4 NETWORKING

This section contains the ACUSON Bonsai™ system networking related services.

4.1 Implementation Model

4.1.1 Application Data Flow

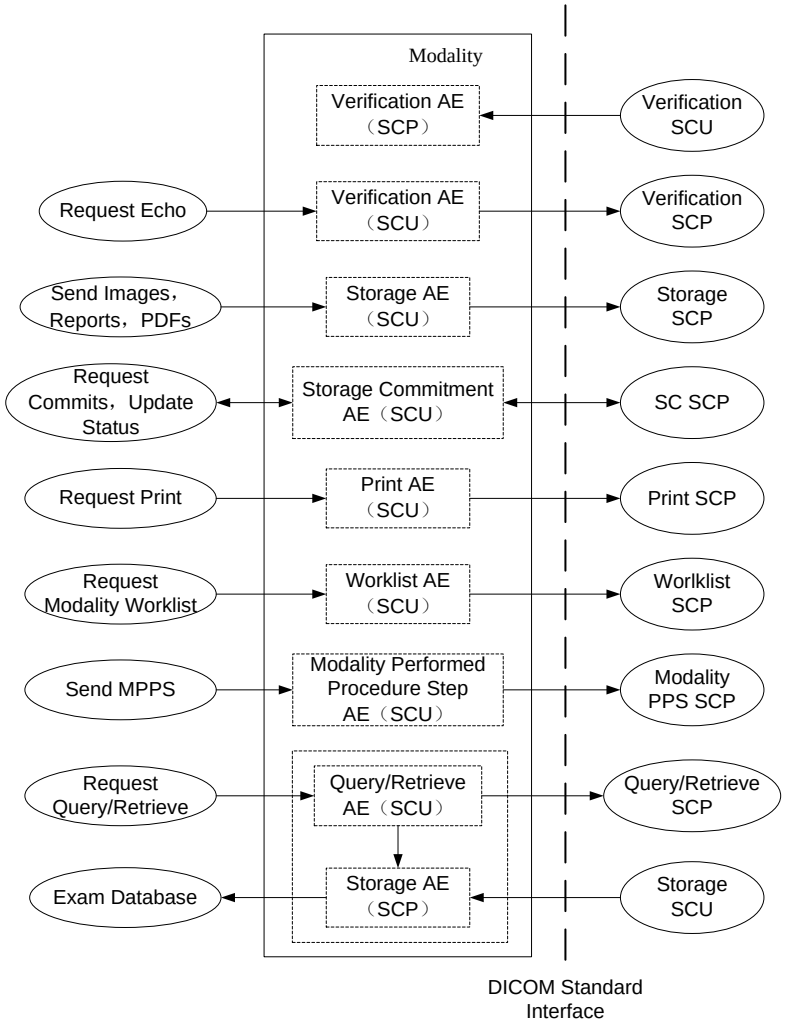

Figure 1
Implementation Model

Note: Storage AE（SCP）can only be used in Query/Retrieve

This application entity provides a user interface, internal database and network listener that spawns additional threads as necessary to handle incoming connections.

Conceptually, the network services may be modeled as the following AE's, however, in fact all the AE's share a single (configurable) AE Title:

Verification AE (as SCU and SCP)
Storage AE (as SCU and SCP)

Storage Commitment AE（SCU）
Print AE (as SCU)
Worklist AE (as SCU)
MPPS AE (as SCU)
Query/Retrieve AE (as SCU)

4.1.2 Functional Definition of AEs

4.1.2.1 Verification AE

The ultrasound system supports the Verification service as a SCU and SCP.

As a SCU, verification is activated when the verify button is selected on the dicom service configuration page where the verification results will also be showed to the user.

As a SCP, verification AE waits in the background for connections, will accept associations with Presentation Contexts for SOP Class of the Verification Service Class, and will respond successfully to echo requests.

4.1.2.2 Storage AE

As a SCU, the Storage AE originates associations for the transfer of DICOM Ultrasound single frame images, multi-frame images, secondary capture images, comprehensive structured reports ,and Encapsulated PDFs to remote AE (selected from a pre-configured list)..

The system supports automatic and manual storage.

The operations for automatic storage service are described below:

Operation 1

Step 1: Enable “Send or printing after End Exam” in the user preset.

Step 2: End Exam, the ended exam (maybe include images, SRs, PDFs) would automatically send to the default storage service SCPs which are set to be default in the DICOM service preset dialog.

Operation 2

Step 1: Open the system preset dialog and switch to the "key config" tab page.

Step 2: Set the shortcut key which means saving image to hard disk and combines the key with the function of sending image to the default DICOM storage SCPs.

Step 3: During the examining, the user can press the Send key to send image to default DICOM storage service SCPs.

The operations for manual storage service are described below:

Operation 1

Step 1: Select the images from thumbnail menu in main UI.

Step 2: Press “Send to” button and select DICOM Storage service SCPs.

Step 3: Send the images to the DICOM Storage service SCPs.

Operation 2

Step 1: Select exams in the iStation Dialog.

Step 2: Press “Send Exam” and select DICOM Storage service SCPs.

Step 3: Send the selected exams (maybe include images, SRs, PDFs) to the DICOM Storage service SCPs.

Operation 3

Step 1: Select thumbnail in the iStation Dialog.

Step 2: Press “Send to” button and select DICOM Storage service SCPs.

Step 3: Send the image to the DICOM Storage service SCPs.

Operation 4

Step 1: Open the review dialog and select the images.

Step 2: Press the “Send To” button to choose the storage SCPs.

Step 3: Send the images to the DICOM Storage service SCPs.

The SR only could be sent in the circumstance as below:

The exam type is cardiac or vascular.

The SR Key for the exam type must be installed in option preset UI.

Exam is the unit to send.

The status of the exam is "End", "Paused" or "Cancelled". SR would not be sent when an active exam is selected.

The DICOM storage service SCPs should be set as "Attach SR when Store Images" or "Only Store SR".

The Encapsulated PDF only could be sent in the circumstance as below:

Exam is the unit to send.

The status of the exam is "End", "Paused" or "Cancelled". Encapsulated PDF would not be sent when an active exam is selected.

The "Encapsulated PDF" should be enabled in DICOM storage service preset.

3D/4D images could send as pre-configuration form:

Table4
3D/4D Transfer Option

3D/4D Option	SOP Class	SOP Class UID
Normal	US Image Storage	1.2.840.10008.5.1.4.1.1.6.1
	US Multiframe Image Storage	1.2.840.10008.5.1.4.1.1.3.1

3D/4D Option	SOP Class	SOP Class UID
Volume	Enhanced US Volume Storage	1.2.840.10008.5.1.4.1.1.6.2
Rawdata	Raw Data Storage	1.2.840.10008.5.1.4.1.1.66

Transfer with Rawdata form is mainly used for 4DViewer to get the raw data of the image. The Storage SCP received the image could not review it because the image information is coded in private form. 4DViewer or Diagnostic Ultrasound System could retrieve the file and review it.

In the event that the ultrasound system is taken off the network as a portable system or when a network failure occurs during a background store, the Storage SCU maintains a queue of failed C-STORE requests. If pre-configured on Preset UI, the failed C-Store requests will be automatically retried specified times. If no pre-configuration, the user can also retry the failed requests manually.

As a SCP, the Storage AE could only be used in Query/Retrieve, otherwise couldn't.

4.1.2.3 Storage Commitment AE

The Storage Commitment AE originates associations to ensure the reliable storage of DICOM composite information objects on remote DICOM device after sending DICOM Storage Service to the device.

The Storage Commitment service will be executed automatically in the circumstance as below:

The Storage Commitment Service is set to associate with the Storage Service in DICOM storage service preset dialog and the associated Storage Service is executed.
Exam is the unit to send.
The status of the exam is "End". It would not be executed when an "Active", "Paused" or "Cancelled" exam is selected.

4.1.2.4 Print AE

As a SCU, the Print AE originates associations for the print of DICOM Ultrasound single frame images and secondary capture images to remote AE (selected from a pre-configured list).

The system is capable of grayscale (B/W) and color print supporting with automatic and manual print functions.

The operations for automatic print service are described below:

Operation 1

Step 1: Enable “Send or printing after End Exam” in the user preset.

Step 2: End Exam, the single frame images and secondary capture images of ended exam would automatically send to the default print service SCPs which are set to be default in the DICOM service preset dialog.

Notes: This operation associates with the “Display Format” of the DICOM print preset, the DICOM print will be not active until one page is filled with the images or the exam end. For example, if the “Display Format” has been set to “STANDARD\2,3”, the DICOM print will be not active until the shortcut key has been pressed 6 times. However, when the exam end, the DICOM print will be active even if one page is not filled.

Operation 2

Step 1: Open the system preset dialog and switch to the "key config" tab page.

Step 2: Set the shortcut key which which means saving image to hard disk and combines the key with the function of sending image to the default DICOM print SCPs.

Step 3: During the examining, the user can press the print key to send image to default DICOM print service SCPs.

The operations for manual print service are described below:

Operation 1

Step 1: Select the images from thumbnail menu in main UI.

Step 2: Press “Send to” button and select DICOM print service SCPs.

Step 3: Send the images to the DICOM print service SCPs.

Operation 2

Step 1: Select exams in the iStation Dialog.

Step 2: Press “Send Exam” and select DICOM print service SCPs.

Step 3: Send the single frame images and secondary capture images of the selected exams to the DICOM print service SCPs.

Operation 3

Step 1: Select thumbnail in the iStation Dialog.

Step 2: Press “Send to” button and select DICOM print service SCPs.

Step 3: Send the image to the DICOM print service SCPs.

Operation 4

Step 1: Open the review dialog and select the images.

Step 2: Press the “Send To” button to choose the print SCPs.

Step 3: Send the images to the DICOM print service SCPs.

4.1.2.5 Worklist AE

The Worklist AE is activated through the Worklist UI when the user selects a remote AE to query (from a pre-configured list).The system supports automatic and manual query depending on its configuration on Preset UI. The system supports fuzzy query using “?” and “*”.

- If set one and only one remote AE to be default status. The system can initiate a query with default rules when show the Worklist UI. The Worklist Server is the default server. The Modality Type is US, the Exam Date is today, and the Scheduled Station AE Title is blank.
- Alternatively if the default status is no, the user can specify query rules on Worklist UI. Such as Patient ID, Patient Name, Accession Number, Requested Procedure ID, Worklist Server, Exam Date, Modality Type and Scheduled Station AE Title.

If no matches are found, a dialogue will be presented to the user to indicate so. The possible reasons for this failure are listed to help trouble shooting.

If more than one matching patients found, user can discover lists number on the UI. The user can also change query rules for another query, or for further filter in local database to locate the patients quickly. And the lists can be sorted in ascending or descending order.

4.1.2.6 MPPS AE

MPPS AE sends event transactions that facilitate the transfer of exam procedure status from the ultrasound system to the information system.

MPPS messages are sent from the system under the following circumstances:

MPPS N-Create, Status = IN PROGRESS. Starting a new exam or reactive an exam result in automated creation of an MPPS Instance managed by a remote AE.

MPPS N-Set, Status = COMPLETE. Completion of the MPPS is performed as the result of an operator action of ending the exam.

MPPS N-Set, Status = DISCONTINUED. “Cancel Exam” causes the “Discontinued” status to be sent. User can select various reasons from the “Reason of cancel Exam” UI when need to cancel an exam.

4.1.2.7 Query/Retrieve AE

The Query/Retrieve AE supports the Query/Retrieve services as an SCU.

As a Query SCU, the system initiates a C-Find request to the remote SCP if pre-configured on the Preset UI, and then query is invoked directly by the user. The system supports fuzzy query using “?” and “*”.

For remote AE, no matter what the default status is, the user can specify query rules on Query/Retrieve UI. Such as Patient ID, Patient Name, Accession Number, Exam Date and select Search Key. If no matches are found, a dialogue will be presented to the user to indicate so. The user can also change query rules for another query, or for further filter in local database to locate the patients quickly.

As a Move SCU, the system supports the Study Root Query Model. The stystem can only retrieve ultrasound images or structed reports, whose modality atrributes are "US" or "SR", but will leap all the other ones. Furthermore, the retrieval destination is only local host.

The system initiates a C-MOVE request to the remote Retrieve SCP when user selects items to retrieve. The remote Retrieve SCP in turn starts C-STORE sub operations to the ultrasound system.

User can discover lists number for queried items, as well as retrieval items. And the lists can be sorted in ascending or descending order.

The system can retrieve the 3D/4D images that have sent to PACS or other Storage SCP in rawdata form. After retrieveing, the system can convert it to the identifiable format and review it.

4.1.3 Sequencing of Real-World Activities

All SCP activities are performed asynchronously in the background and not dependent on any sequencing.

All SCU activities are sequentially initiated in the user interface, and another activity may not be initiated until the prior activity has completed.

4.2 AE Specifications

4.2.1 Modality AE

4.2.1.1 SOP Classes

The ultrasound system provides Standard Conformance to the following SOP Class:

Table5
SOP Class for Modality AE

SOP Class Name	SOP Class UID	SCU	SCP
Verification SOP Class	1.2.840.10008.1.1	Yes	Yes
US Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Yes	Yes[1]
US Multiframe Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Yes	Yes[1]
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Yes	Yes[1]
Comprehensive Structured Report Storage	1.2.840.10008.5.1.4.1.1.88.33	Yes	Yes[1]
Encapsulated PDF Storage	1.2.840.10008.5.1.4.1.1.104.1	Yes	Yes[1]
Enhanced US Volume Storage	1.2.840.10008.5.1.4.1.1.6.2	Yes	No
Raw Data Storage	1.2.840.10008.5.1.4.1.1.66	Yes	Yes
Storage Commitment Push Model	1.2.840.10008.1.20.1	Yes	No
Basic Grayscale Print Management Meta	1.2.840.10008.5.1.1.9	Yes	No
Basic Color Print Management Meta SOP Class	1.2.840.10008.5.1.1.18	Yes	No
Basic Film Session SOP Class	1.2.840.10008.5.1.1.1	Yes	No
Basic Film Box SOP Class	1.2.840.10008.5.1.1.2	Yes	No
Basic Grayscale Image Box SOP Class	1.2.840.10008.5.1.1.4	Yes	No
Printer SOP Class	1.2.840.10008.5.1.1.16	Yes	No
Print Job SOP Class	1.2.840.10008.5.1.1.14	Yes	No
Modality Worklist Information Model–Find	1.2.840.10008.5.1.4.31	Yes	No
Modality Performed Procedure Step SOP Class	1.2.840.10008.3.1.2.3.3	Yes	No
Study Root Query/Retrieve Information Model - Find	1.2.840.10008.5.1.4.1.2.2.1	Yes	No
Study Root Query/Retrieve Information Model - Move	1.2.840.10008.5.1.4.1.2.2.2	Yes	No

Note：1 Yes only used in Query/Retrieve, otherwise No.

4.2.1.2 Association Establishment Policies

General

The DICOM standard application context name for DICOM 3.0 is always proposed:

Table6
DICOM Application Context for Modality AE

Application Context Name	1.2.840.10008.3.1.1.1

The PDU size is configurable with a minimum size of 16,384 and a maximum size of 65,536. The default PDU size is 32,768.

Number of Associations

The system initiates one Association at a time for each destination to which a transfer request is being processed in the active job queue list. Since Storage and Print tasks are executed within a same thread, when they are selected simultaneously, only one job will be active at a time, the other(s) remain pending until the active job is successful or failed.

Table7
Number of Associations as an Association Initiator

Maximum number of simultaneous associations	1

Table8
Number of Associations as an Association Acceptor

Maximum number of simultaneous associations	1

Asynchronous Nature

The ultrasound system will only allow a single outstanding operation on an association.

Implementation Identifying Information

Table9
DICOM Implementation Class and Version for Modality AE

Implementation Class UID	1.2.156.112536.1.2116.0.1.0.1
Implementation Version Name	SIEMENS_V1.0

4.2.1.3 Association Initiation Policy

Activity – Request Echo

Description and Sequencing of Activities

The user can verify the existence of a DICOM server on the hospitals network, through a button in the ‘DICOM Service’ screen. When the user presses this button, the ultrasound system will initiate the association.

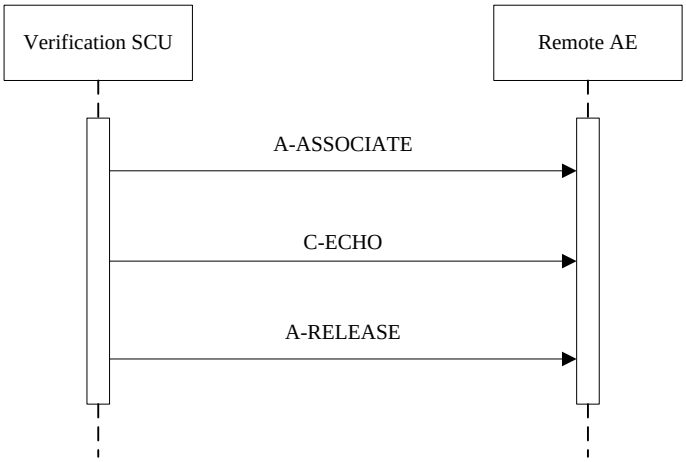

Figure2
Sequencing of Activity – Send Echo Request

Proposed Presentation Contexts

The Verification AE (as SCU) supports the following Presentation Contexts for Verification.

Table10
Presentation Contexts for Verification

PROPOSED PRESENTATION CONTEXTS					
Abstract Syntax		**Transfer Syntax**		**Role**	**Ext. Neg.**
Name	**UID**	**Name**	**UID**		
Verification	1.2.840.10008.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None

SOP Specific Conformance

It summarizes the behavior of Ultrasound System when receiving status codes in a C-ECHO response.

Table 11
Verification C-Echo Response Status Handling Behavior

Service Status	Further Meaning	Error Code	Behavior (as SCU)
Success	Success	0000	Device Status is set to: Verify Successful
Refused	Out of Resources	A7XX	Device Status is set to: Verify Failed
Failed	Unable to process	CXXX	Device Status is set to: Verify Failed
*	*	Any other status code	Device Status is set to: Verify Failed

Activity – Store images, SRs, PDFs, 3D/4D images

Description and Sequencing of Activities

For each exam, image selected from the user interface to be transferred, an attempt will be made to transfer it to the selected remote AE. When the storage fails, not only the failed task will automatically retry specific times if configured on Preset UI, but also user can restart the failed task by pressing “Retry” Button on the ultrasound task management dialog. Besides that, in the event that the ultrasound system is taken off the network or when a network failure occurs during a background store, the Storage SCU maintains a queue of failed C-STORE requests. Once the network is restored, the system will retry automaticlly.

Structured Reports will contain a part of common used measurements and calculations created by ultrasound system, and custom measurements or calculations will also be sent in SR

If custom measurements or calculations were defined, all custom measurements or calculations will be contained in private elements(M-99999,MRUS, "custom-measurement-name") in SR, where " custom-measurement-name " means the name of user custom measurement in the ultrasound system.

The Adult Card exam type creates Adult Echocardiography Reports.

The Abd, Uro and Vas exam types create Vascular Reports.

The OB and Gyn exam types create OB-GYN Ultrasound Procedure Reports.

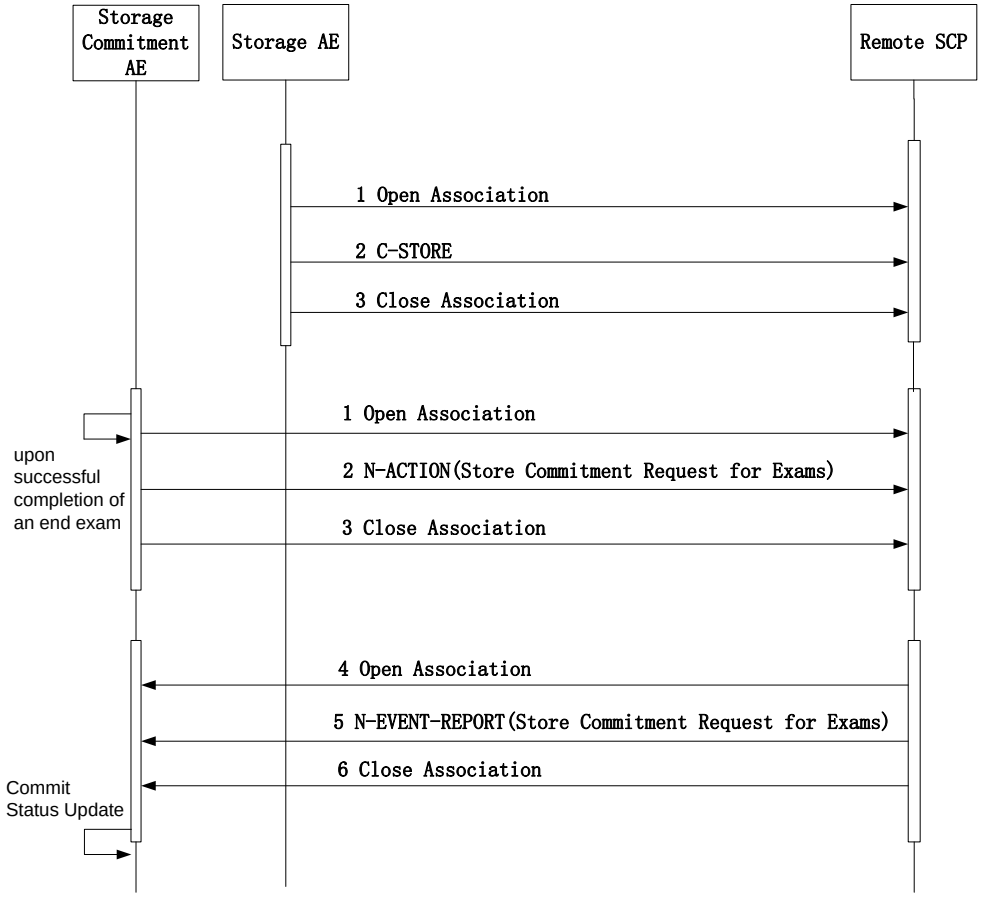

Figure3
Sequencing of Activity – Send Storage Request

Proposed Presentation Contexts

If Storage AE is offered a choice of Transfer Syntaxes in the accepted Presentation Contexts, it will apply the first encountered to use for the C-STORE operation. As to Compress Transfer Syntaxes, it will apply the user configured one.

Table12
Proposed Presentation Contexts for Storage

PROPOSED PRESENTATION CONTEXTS					
Abstract Syntax		**Transfer Syntax**		**Role**	**Ext. Neg.**
Name	**UID**	**Name**	**UID**		
US Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		JPEG Lossy, Baseline Sequential with Huffman Coding (Process 1)	1.2.840.10008.1.2.4.50	SCU	None

		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1])	1.2.840.10008.1.2.4.70	SCU	None
		RLE Lossless	1.2.840.10008.1.2.5	SCU	None
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90	SCU	None
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91	SCU	None
US Multiframe Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		JPEG Lossy, Baseline Sequential with Huffman Coding (Process 1)	1.2.840.10008.1.2.4.50	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1])	1.2.840.10008.1.2.4.70	SCU	None
		RLE Lossless	1.2.840.10008.1.2.5	SCU	None
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90	SCU	None
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91	SCU	None
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		JPEG Lossy, Baseline Sequential with Huffman Coding (Process 1)	1.2.840.10008.1.2.4.50	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1])	1.2.840.10008.1.2.4.70	SCU	None
		RLE Lossless	1.2.840.10008.1.2.5	SCU	None
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90	SCU	None
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91	SCU	None
Comprehensive Structured	1.2.840.10008.5.1.	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None

Report Storage	4.1.1.88.33	JPEG Lossy, Baseline Sequential with Huffman Coding (Process 1)	1.2.840.10008.1.2.4.50	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1])	1.2.840.10008.1.2.4.70	SCU	None
		RLE Lossless	1.2.840.10008.1.2.5	SCU	None
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90	SCU	None
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91	SCU	None
Encapsulated PDF Storage	1.2.840.10008.5.1.4.1.1.104.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		JPEG Lossy, Baseline Sequential with Huffman Coding (Process 1)	1.2.840.10008.1.2.4.50	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1])	1.2.840.10008.1.2.4.70	SCU	None
		RLE Lossless	1.2.840.10008.1.2.5	SCU	None
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90	SCU	None
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91	SCU	None
Enhanced US Volume Storage	1.2.840.10008.5.1.4.1.1.6.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		JPEG Lossy, Baseline Sequential with Huffman Coding (Process 1)	1.2.840.10008.1.2.4.50	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1])	1.2.840.10008.1.2.4.70	SCU	None
		RLE Lossless	1.2.840.10008.1.2.5	SCU	None
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90	SCU	None
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91	SCU	None
Raw Data	1.2.840.	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

Storage	10008.5.1.4.1.1.66	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		JPEG Lossy, Baseline Sequential with Huffman Coding (Process 1)	1.2.840.10008.1.2.4.50	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1])	1.2.840.10008.1.2.4.70	SCU	None
		RLE Lossless	1.2.840.10008.1.2.5	SCU	None
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90	SCU	None
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91	SCU	None

SOP Specific Conformance

Storage AE provides Standard Conformance to the Storage Service Class.
Storage AE will behave as described in the Table below in response to the status returned in the C-STORE response command message.

Table13
Storage C-STORE Response Status Handling Behavior

Service Status	Further Meaning	Error Code	Behavior
Success	Success	0000	Image transmission is successful, The status code is logged and the task success is reported to the user via task management.
Refused	Out of Resources	A7xx	The association is aborted using A-ABORT and the send task is marked as failed. The reason is logged and, If user selects the failed task, the reasons for this failure will be showed via task management.
Error	Data Set does not match SOP Class	A9xx	The association is aborted using A-ABORT and the send task is marked as failed. The reason is logged and, If user selects the failed task, the reasons for this failure will be showed via task management.
Error	Cannot Understand	Cxxx	The association is aborted using A-ABORT and the send job is marked as failed. The reason is logged and, If user selects the failed task, the reasons for this failure will be showed via task management.
Failure	Any other failure	xxxx	The association is aborted using A-ABORT and the send job is marked as failed. The reason is logged and, If user selects the failed task, the reasons for this failure will be showed via task management.
Warning	Coercion of Data Elements	B000	Image transmission is considered successful but the status meaning is logged.
	Data Set does not match SOP Class	B007	Image transmission is considered successful but the status meaning is logged.

	Elements Discarded	B006	Image transmission is considered successful but the status meaning is logged.
	Any other status code.	xxxx	The Association is aborted using A-ABORT and the send job is marked as failed. The status code is logged and the job failure is reported to the user via task management.

The behavior during communication failure is summarized in the Table below:

Table 14
Storage Communication Failure Behavior

Exception	Behavior
Timeout	The Association is aborted using A-ABORT and the send job is marked as failed. The reason is logged and the job failure is reported to the user via task management.
Association aborted by the SCP or network layers	The send job is marked as failed. The reason is logged and the job failure is reported to the user via task management.

The following tables provide the list of attributes requested in the Storage.

Table 15
US Image IOD

IE	Module
Patient	Patient
Study	General Study
	Patient Study
Series	General Series
Equipment	General Equipment
Image	General Image
	Image Pixel
	US Region Calibration
	US Image
	VOI LUT
	SOP Common

Table 16
US Multi-Frame Image IOD

IE	Module
Patient	Patient
Study	General Study
	Patient Study

IE	Module
Series	General Series
Equipment	General Equipment
Image	General Image
	Image Pixel
	Cine
	Multi-frame
	US Region Calibration
	US Image
	VOI LUT
	SOP Common

Table 17
SC Image IOD

IE	Module
Patient	Patient
Study	General Study
	Patient Study
Series	General Series
Equipment	General Equipment
	SC Equipment
Image	General Image
	Image Pixel
	SC Image
	VOI LUT
	SOP Common

Table 18
Encapsulated PDF IOD

IE	Module
Patient	Patient
Study	General Study
	Patient Study
Series	Encapsulated Document
Equipment	General Equipment
	SC Equipment
Encapsulated Document	Encapsulated Document
	SOP Common

Table 19
Raw Data IOD

IE	Module
Patient	Patient
Study	General Study
	Patient Study
Series	General Series
Equipment	General Equipment
Raw Data	Acquisition Context
	Raw Data
	SOP Common

Table 20
Enhanced US Volume IOD

IE	Module
Patient	Patient
Study	General Study
	Patient Study
Series	General Series
	Enhanced US Series
Frame of Reference	Frame of Reference
	Ultrasound Frame of Reference
	Synchronization

IE	Module
Equipment	General Equipment
	Enhanced General Equipment
Image	General Image
	Image Pixel
	Multi-frame Functional Groups
	Multi-frame Dimension
	Acquisition Context
	Enhanced US Image
	SOP Common

Table 21
Patient Module

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0010,0010)	PN	2	Patient's Name	MWL/USER
(0010,0020)	LO	2	Patient ID	MWL/USER
(0010,0030)	DA	2	Patient's Birth Date	MWL/USER, default is set to zero length
(0010,0040)	CS	2	Patient's Sex	MWL/USER, default is set to zero length
(0010,1000)	LO	3	Other Patient IDs	MWL/USER
(0010,2160)	SH	3	Ethnic Group	MWL
(0010,4000)	LT	3	Patient Comments	MWL/USER

Table 22
General Study Module

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0008,0020)	DA	2	Study Date	AUTO
(0008,0030)	TM	2	Study Time	AUTO
(0008,0050)	SH	2	Accession Number	MWL/USER, default is set to zero length
(0008,0090)	PN	2	Referring Physician's Name	MWL/USER, default is set to zero length
(0008,1030)	LO	3	Study Description	MWL/USER, default is set to zero length
(0008,1032)	SQ	3	Procedure Code Sequence	MWL
(0020,000D)	UI	1	Study Instance UID	MWL/AUTO
(0020,0010)	SH	2	Study ID	AUTO

Table 23
Patient Study Module

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0008,1080)	LO	3	Admitting Diagnoses Description	MWL

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0010,1010)	AS	3	Patient's Age	MWL/USER, default is set to zero length If the user set Patient Birth Date, it will be calculated automatically.
(0010,1020)	DS	3	Patient's Size	MWL/USER, default is set to zero length
(0010,1030)	DS	3	Patient's Weight	MWL/USER, default is set to zero length
(0010,21B0)	LT	3	Additional Patient History	MWL

Table 24
General Series Module

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0008,0021)	DA	3	Series Date	AUTO
(0008,0031)	TM	3	Series Time	AUTO
(0008,0060)	CS	1	Modality	“US”
(0008,103E)	LO	3	Series Description	MWL/USER
(0008,1050)	PN	3	Performing Physician's Name	MWL/USER, default is set to zero length
(0008,1070)	PN	3	Operators' Name	MWL/USER, default is set to zero length
(0018,1030)	LO	3	Protocol Name	AUTO – set to ExamType
(0018,5100)	CS	2C	Patient Position	Set to zero length
(0020,000E)	UI	1	Series Instance UID	AUTO
(0020,0011)	IS	2	Series Number	AUTO
(0020,0060)	CS	2C	Laterality	Set to zero length
(0040,0244)	DA	3	Performed Procedure Step Start Date	MPPS
(0040,0245)	TM	3	Performed Procedure Step Start Time	MPPS
(0040,0254)	LO	3	Performed Procedure Step Description	MPPS
(0040,0260)	SQ	3	Performed Protocol Code Sequence	MPPS

Table 25
Encapsulated Document Series Module

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0008,0060)	CS	1	Modality	“US”
(0020,000E)	UI	1	Series Instance UID	AUTO
(0020,0011)	IS	1	Series Number	AUTO
(0008,103E)	LO	3	Series Description	MWL/USER
(0040,0275)	SQ	3	Request Attributes Sequence	MWL
(0040,1001)	SH	1C	>Requested Procedure ID	MWL
(0040,0009)	SH	1C	>Scheduled Procedure Step ID	MWL

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0040,0007)	LO	3	>Scheduled Procedure Step MWL Description	MWL
(0040,0008)	SQ	3	>Scheduled Protocol Code Sequence	MWL
(0008,0100)	SH	1C	>>Code Value	MWL
(0008,0102)	SH	1C	>>Coding Scheme designator	MWL
(0008,0103)	SH	1C	>>Coding Scheme Version	MWL
(0008,0104)	LO	1C	>>Code Meaning	MWL

Table 26
Enhanced US Series Module

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0008,0060)	CS	1	Modality	“US”
(0008,1111)	SQ	1C	Referenced Performed Procedure Step Sequence	MPPS
(0040,0260)	SQ	1C	Performed Protocol Code Sequence	MWL

Table 27
Frame of Reference Module

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0020,0052)	UI	1	Frame of Reference UID	AUTO
(0020,1040)	LO	2	Position Reference Indicator	Set to zero length

Table 28
Ultrasound Frame of Reffrence Module

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0020,9312)	UI	1	Volume Frame of Reference UID	AUTO
(0020,9307)	CS	1	Ultrasound Acquisition Geometry	“APEX”
(0020,9308)	FD	1C	Apex Position	Position of the apex (or phase center) of the acquisition geometry, encoded as xA, yA, and zA in mm units in the Volume Frame of Reference.
(0020,9309)	FD	1	Volume to Transducer Mapping Matrix	A 4x4 homogeneous transformation matrix that maps the Volume Frame of Reference coordinate system (XV, YV, ZV) to the Transducer Frame of Reference coordinate system (XX,YX, ZX).

Table 29
Synchronization Module

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0020,0200)	UI	1	Synchronization Frame of Reference UID	“1.2.840.10008.15.1.1”
(0018,106A)	CS	1	Synchronization Trigger	“EXTERNAL”: System is synchronized to the international standard UTC. “NO TRIGGER”: System is not synchronized.
(0018,1800)	CS	1	Acquisition Time Synchronized	“Y”: Time Synchronized service is enabled. “N”: Time Synchronized service is not enabled.
(0018,1802)	CS	3	Time Distribution Protocol	“SNTP”: Time Synchronized service is enabled. Set to zero length: Time Synchronized service is not enabled.

Table 30
General Equipment Module

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0008,0070)	LO	2	Manufacturer	“SIEMENS”
(0008,0080)	LO	3	Institution Name	CONFIG
(0008,1010)	SH	3	Station Name	CONFIG
(0008,1040)	LO	3	Institutional Department Name	CONFIG
(0018,1000)	LO	3	Device Serial Number	The Ethernet card Mac Address
(0018,1020)	LO	3	Software Version(s)	AUTO

Table 31
SC Equipment Module

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0008,0060)	CS	3	Modality	“US”
(0008,0064)	CS	1	Conversion Type	“WSD”
(0018,1016)	LO	3	Secondary Capture Device Manufacturer	“SIEMENS”
(0018,1018)	LO	3	Secondary Capture Device Manufacturer's Model Name	“ACUSON Bonsai™”
(0018,1019)	LO	3	Secondary Capture Device Software Version(s)	AUTO

Table 32
Enhanced General Equipment Module

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0008,0070)	LO	1	Manufacturer	“SIEMENS”
(0008,1090)	LO	1	Manufacturer’s Model Name	“ACUSON Bonsai™”
(0018,1000)	LO	1	Device Serial Number	The Ethernet card Mac Address
(0018,1020)	LO	3	Software Versions	AUTO

Table 33
General Image Module

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0008,0023)	DA	2C	Content Date	AUTO
(0008,0033)	TM	2C	Content Time	AUTO
(0008,2111)	ST	3	Derivation Description	CONFIG, default is set to zero length
(0020,0013)	IS	2	Instance Number	AUTO
(0020,0020)	CS	2C	Patient Orientation	Set to zero length
(0020,4000)	LT	3	Image Comments	Set to zero length
(0028,0301)	CS	3	Burned In Annotation	“YES”

Table 34
US Image Module

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0008,0008)	CS	2	Image Type	"ORIGINAL/PRIMARY"
(0018,5010)	LO	3	Transducer Data	USER
(0018,5020)	LO	3	Processing Function	USER
(0028,0002)	US	1	Samples per Pixel	1 or 3
(0028,0004)	CS	1	Photometric Interpretation	"RGB", for color images; "MONOCHROME2", if the image is grayscale; "YBR_FULL_422", if the image is sent using JPEG. "RGB", if the image is sent using JPEG Lossless. "YBR_FULL", if the image is sent using RLE Lossless. "YBR_ICT", if the image is sent using JPEG 2000 Image Compression. "YBR_RCT",if the image is sent using JPEG 2000 Image Compression (Lossless Only)
(0028,0006)	US	1C	Planar Configuration	1, if the image is sent using RLE Lossless 0，otherwise.
(0028,0009)	AT	1C	Frame Increment Pointer	Frame Time
(0028,0014)	US	3	Ultrasound Color Data Present	0 or 1
(0028,0100)	US	1	Bits Allocated	0x0008
(0028,0101)	US	1	Bits Stored	0x0008
(0028,0102)	US	1	High Bit	0x0007
(0028,0103)	US	1	Pixel Representation	0x0000
(0028,2110)	CS	1C	Lossy Image Compression	Not used if image is uncompressed; support JPEG baseline, JPEG Lossless,RLE Lossless,JPEG 2000 Image Compression,JPEG 2000 Image Compression (Lossless Only) process1 and set it to "01"

Table 35
SC Image Module

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0018,1012)	DA	3	Date of Secondary Capture	AUTO
(0018,1014)	TM	3	Time of Secondary Capture	AUTO

Table 36
Image Pixel Module

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0028,0010)	US	1	Rows	CONFIG
(0028,0011)	US	1	Columns	CONFIG
(0028,0034)	IS	1c	Pixel Aspect Ratio	Set to zero length
(7FE0,0010)	OW	1	Pixel Data	

Table 37
VOI LUT Module

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0028,1050)	DS	1C	Window Center	AUTO
(0028,1051)	DS	1C	Window Width	AUTO

Table 38
SOP Common Module

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0008,0005)	CS	1C	Specific Character Set	AUTO
(0008,0012)	DA	3	Instance Creation Date	AUTO
(0008,0013)	TM	3	Instance Creation Time	AUTO
(0008,0016)	UI	1C	SOP Class UID	AUTO
(0008,0018)	UI	1C	SOP Instance UID	AUTO

Table 39
US Region Calibration Module

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0018,6011)	SQ	1	Sequence of Ultrasound Regions	
>(0018,6012)	US	1	Region Spatial Format	Set by the system
>(0018,6014)	US	1	Region Data Type	Set by the system
>(0018,6016)	UL	1	Region Flags	Set by the system
>(0018,6018)	UL	1	Region Location Min X0	Set by the system
>(0018,6020)	UL	1	Reference Pixel x0	Set by the system
>(0018,6022)	UL	1	Reference Pixel y0	Set by the system
>(0018,6028)	UL	1	Ref. Pixel Physical Value X	Set by the system
>(0018,602A)	UL	1	Ref. Pixel Physical Value Y	Set by the system
>(0018,601A)	UL	1	Region Location Min Y0	Set by the system

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
>(0018,601C)	UL	1	Region Location Max X1	Set by the system
>(0018,601E)	UL	1	Region Location Max Y1	Set by the system
>(0018,6024)	US	1	Physical Units X Direction	Set by the system
>(0018,6026)	US	1	Physical Units Y Direction	Set by the system
>(0018,602C)	FD	1	Physical Delta X	Set by the system
>(0018,602E)	FD	1	Physical Delta Y	Set by the system

Table 40

Cine Module Used for US Multi-Frame Images Only

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0008,2142)	IS	3	Start Trim	Set by the system
(0008,2143)	IS	3	Stop Trim	Set by the system
(0008,2144)	IS	3	Recommended Display Frame Rate	Set by the system
(0018,0040)	IS	3	Cine Rate	CONFIG
(0018,0072)	DS	3	Effective Duration	Set by the system
(0018,1063)	DS	1C	Frame Time	Set by the system
(0018,1065)	DS	1C	Frame Time Vector	Set by the system
(0018,1066)	DS	3	Frame Delay	Set by the system
(0018,1242)	IS	3	Actual Frame Duration	Set by the system
(0018,1244)	US	3	Preferred Playback Sequencing	Set by the system

Table 41
Multi-Frame Module Used for US Multi-Frame Images Only

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0028,0008)	IS	1	Number of Frames	AUTO
(0028,0009)	AT	1	Frame Increment Pointer	0018 1063 = Frame Time

Table 42
SC Equipment Module Used for Second Capture Images Only

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0008,0060)	CS	3	Modality	“US”
(0008,0064)	CS	1	Conversion Type	“WSD”
(0018,1010)	LO	3	Secondary Capture Device ID	“ACUSON Bonsai™”
(0018,1016)	LO	3	Secondary Capture Device Manufacturer	“SIEMENS”

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0018,1018)	LO	3	Secondary Capture Device Manufacturer's Model Name	"ACUSON Bonsai™"
(0018,1019)	LO	3	Secondary Capture Device Software Version(s)	AUTO

Table 43
SC Image Module Used for Second Capture Images Only

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0018,1012)	DA	3	Date of Secondary Capture	AUTO
(0018,1014)	TM	3	Time of Secondary Capture	AUTO

Table 44
Encapsulated Document Module

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0020,0013)	IS	1	Instance Number	AUTO
(0008,0023)	DA	2	Content Date	AUTO
(0008,0033)	TM	2	Content Time	AUTO
(0008,002A)	DT	2	Acquisition DateTime	AUTO
(0028,0301)	CS	1	Burned In Annotation	"YES"
(0042,0010)	ST	2	Document Title	The Title of the Document
(0040,A043)	SQ	2	Concept Name Code Sequence	Set to zero length
(0040,A493)	CS	3	Verification Flag	AUTO. "UNVERIFIED" = Not attested by a legally accountable person. "VERIFIED" = Attested to (signed) by a Verifying Observer or Legal Authenticator named in the document, who is accountable for its content.
(0042,0012)	LO	1	MIME Type of Encapsulated Document	"application/pdf"
(0042,0011)	OB	1	Encapsulated Document	The PDF Document

Table 45
Acquisition Context Module

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0040,0555)	SQ	2	Acquisition Context Sequence	Set to zero length

Table 46
Raw Data Module

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0020,0013)	SQ	2	Instance Number	Set to zero length
(0008,0023)	DA	1	Content Date	AUTO
(0008,0033)	TM	1	Content Time	AUTO
(0008,9123)	UI	1	Creator-Version UID	AUTO
(5001,0010)			: private mapped to (5001,00FF)	“SIEMENSRawData”
(5001,1011)			: private mapped to (5001,FF11)	
(5001,1013)			: private mapped to (5001,FF13)	

Table 47
Multi-frame Functional Groups Module

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(5200,9229)	SQ	2	Shared Functional Groups Sequence	
(0028,9132)	SQ	1	> Frame VOI LUT Sequence	
(0028,1050)	DS	1	>>Window Center	Set by the system
(0028,1051)	DS	1	>>Window Width	Set by the system
(0020,930F)	SQ	1	>Plane Orientation (Volume) Sequence	
(0020,9302)	FD	1	>>Image Orientation (Volume)	Set by the system
(0018,9806)	SQ	1	>US Image Description Sequence	
(0008,9007)	CS	1	>>Frame Type	“ORIGINAL\PRIMARY”
(0008,9206)	CS	1	>>Volumetric Properties	“VOLUME”
(0008,9207)	CS	1	>>Volume	“NONE”

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
			Based Calculation Technique	
(5200,9230)	SQ	1	Per-frame Functional Groups Sequence	
(0020,9111)	SQ	1	>Frame Content Sequence	
(0018,9151)	DT	1C	>>Frame Reference DateTime	Set by the system
(0018,9074)	DT	1C	>>Frame Acquisition DateTime	Set by the system
(0018,9220)	FD	1C	>>Frame Acquisition Duration	Set by the system
(0020,9157)	UL	1C	>>Dimension Index Values	Set by the system
(0020,930E)	SQ	1	>Plane Position (Volume) Sequence	
(0020,9301)	FD	1	>>Image Position (Volume)	Set by the system
(0020,9310)	SQ	1	>Temporal Position Sequence	
(0020,930D)	FD	1	>>Temporal Position Time Offset	Set by the system
(0018,9807)	SQ	1	>Image Data Type Sequence	
(0018,9808)	CS	1	>>Data Type	Set by the system “TISSUE_INTENSITY” or “FLOW_VELOCITY”
(0018,980B)	CS	1	>>Aliased Data Type	“NO”
(0020,0013)	IS	1	Instance Number	AUTO
(0008,0023)	DA	1	Content Date	AUTO
(0008,0033)	TM	1	Content Time	AUTO
(0028,0008)	IS	1	Number of Frames	AUTO

Table 48
Multi-frame Dimension Module

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0020,9221)	SQ	1	Dimension Organization Sequence	

(0020,9164)	UI	1	>Dimension Organization UID	AUTO
(0020,9222)	SQ	1	Dimension Index Sequence	Including 3 items.
(0020,9165)	AT	1	>Dimension Index Pointer	Item1: 0x0020930d Item2: 0x00209301 Item3: 0x00189808
(0020,9167)	AT	1C	>Functional Group Pointer	Item1: 0x00209310 Item2: 0x0020930e Item3: 0x00189807
(0020,9164)	UI	1C	>Dimension Organization UID	Item1, Item2, Item3: AUTO
(0020,9421)	LO	3	>Dimension Description Label	Item1: Time Item2: Image position(Z) Item3: Data type

Table 49
Enhanced US Image Module

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0008,0008)	CS	1	Image Type	“ORIGINAL/PRIMARY”
(0028,0002)	US	1	Samples Per Pixel	“1”
(0028,0004)	CS	1	Photometric Interpretation	“MONOCHROME2”
(0028,0100)	US	1	Bits Allocated	“8”
(0028,0101)	US	1	Bits Stored	“8”
(0028,0102)	US	1	High Bit	“7”
(0028,0103)	US	1	Pixel Representation	“0”
(0020,9311)	CS	1	Dimension Organization Type	“3D” or “3D_TEMPORAL”:
(0008,002A)	DT	1	Acquisition Datetime	AUTO
(0018,9073)	FD	1	Acquisition Duration	Set by the system
(0028,0030)	DS	1	Pixel Spacing	Set by the system
(0018,980C)	CS	1C	Position Measuring Device Used	“FREEHAND”
(2050,0020)	CS	1	Presentation LUT Shape	“IDENTITY”
(0028,1052)	DS	1	Rescale Intercept	“0”
(0028,1053)	DS	1	Rescale Slope	“1”
(0028,0301)	CS	1	Burned In Annotation	“NO”
(0018,9809)	SQ	1	Transducer Scan Pattern Code Sequence	
>(0008,0100)	SH	1	Code Value	“125242”
>(0008,0102)	SH	1	Coding Scheme Designator	“DCM”

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
>(0008,0103)	SH	1	Coding Scheme Version	“20090409”
>(0008,0104)	LO	1	Code Meaning	“Volume scan pattern”
(0018,980D)	SQ	1	Transducer Geometry Code Sequence	
>(0008,0100)	SH	1	Code Value	“125254”
>(0008,0102)	SH	1	Coding Scheme Designator	“DCM”
>(0008,0103)	SH	1	Coding Scheme Version	“20090409”
>(0008,0104)	LO	1	Code Meaning	“Sector ultrasound transducer geometry”
(0018,980E)	SQ	1	Transducer Beam Steering Code Sequence	
>(0008,0100)	SH	1	Code Value	“125258”
>(0008,0102)	SH	1	Coding Scheme Designator	“DCM”
>(0008,0103)	SH	1	Coding Scheme Version	“20090409”
>(0008,0104)	LO	1	Code Meaning	“Mechanical beam steering”
(0018,980F)	SQ	1	Transducer Application Code Sequence	
>(0008,0100)	SH	1	Code Value	“125261”
>(0008,0102)	SH	1	Coding Scheme Designator	“DCM”
>(0008,0103)	SH	1	Coding Scheme Version	“20090409”
>(0008,0104)	LO	1	Code Meaning	“External Transducer”
(0018,5022)	DS	1	Mechanical Index	Set by the system
(0018,5024)	DS	1	Bone Thermal Index	Set by the system
(0018,5026)	DS	1	Cranial Thermal Index	Set by the system
(0018,5027)	DS	1	Soft Tissue Thermal Index	Set by the system
(0018,9801)	FD	1	Depth(s) of Focus	Set by the system
(0018,5050)	IS	1	Depth of Scan Field	Set by the system

Conventions used for the Value(s) and Comments section are:

MWL – the attribute value source is from Modality WORKLIST
USER – the attribute value source is from User’s input
AUTO – automatically generated by the MODALITY system
CONFIG - the attribute value source is a configurable parameter

Activity – Film Images

Description and Sequencing of Activities

A user composes images onto film sheets and requests them to be sent to a specific hardcopy device. The user can select the desired film format and number of copies. Each print-job is forwarded to the job queue and processed individually.

The system is invoked by the user on “Send to” UI if the print remote AE is pre-configured. Status of the print-job is reported through task management UI. If pre-configured on Preset UI, the failed print task will be automatically retried specified times. If no pre-configuration, the user can also retry manually. Only one task will be active at a time for each separate hardcopy device. The same as Storage, the system could retry automaticlly the failed task caused by network failure，when the network is restored.

A typical sequence of DIMSE messages sent over an association between Print AE and a Printer is illustrated in Figure4:

Print AE opens an association with the Printer.

N-GET on the Printer SOP Class is used to obtain current printer status information.

N-CREATE on the Film Session SOP Class creates a Film Session.

N-CREATE on the Film Box SOP Class creates a Film Box linked to the Film Session. A single Image Box will be created as the result of this operation (Print AE default uses the format STANDARD\1.1, but user can change it on Preset UI).

N-SET on the Image Box SOP Class transfers the contents of the film sheet to the printer.

N-ACTION on the Film Box SOP Class instructs the printer to print the Film Box.

The Printer prints the requested number of film sheets.

The Printer asynchronously reports its status via N-EVENT-REPORT notification (Printer SOP Class). The Printer can send this message at any time. Print AE does not require the N-EVENT-REPORT to be sent. Print AE is capable of receiving an N-EVENT-REPORT notification at any time during an association.

N-DELETE on the Film Box SOP Class deletes the complete Film box SOP Instance hierarchy.

N-DELETE on the Film Session SOP Class deletes the complete Film Session SOP Instance hierarchy.

Print AE closes the association with the Printer.

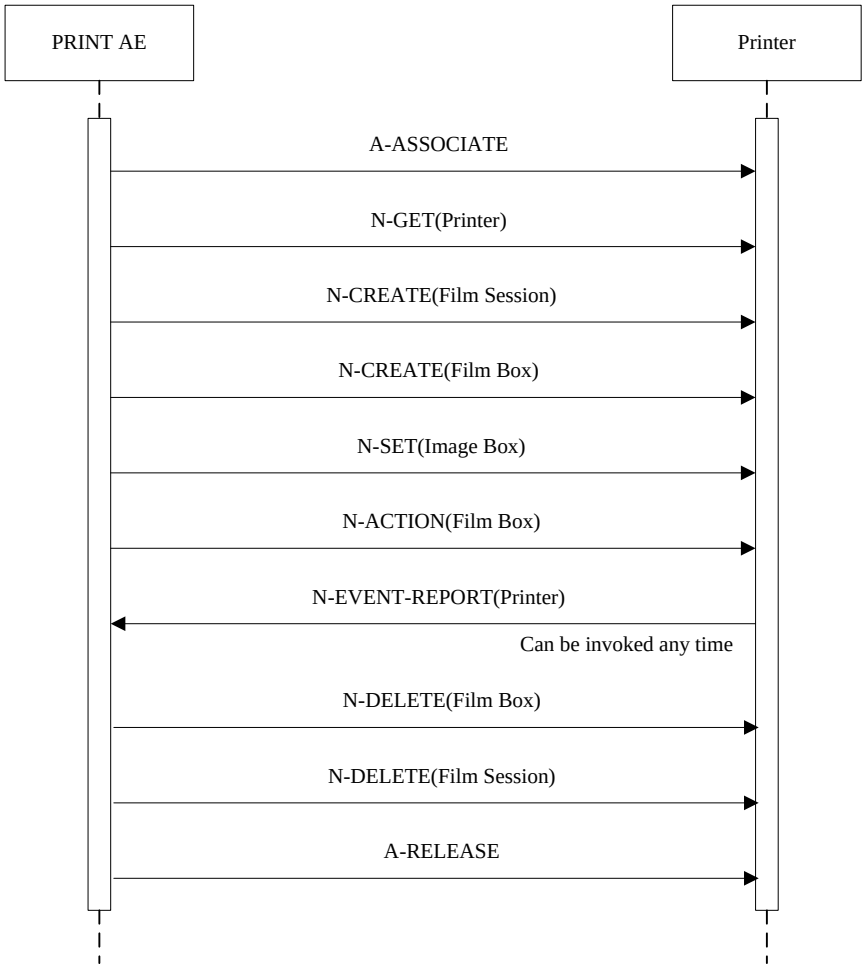

Figure4
Sequencing of Activity – Film Images

Proposed Presentation Contexts

Print AE is capable of proposing the Presentation Contexts shown in the Table below:

Table50
Proposed Presentation Contexts for Activity Film Images

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Ext. Neg.**
Name	**UID**	**Name List**	**UID List**		
Basic Grayscale Print	1.2.840.10008.5.1.1.9	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

Management Meta		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
Basic Color Print Management Meta	1.2.840.10008.5.1.1.18	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None

Common SOP Specific Conformance for all Print SOP Classes

The general behavior of Print AE during communication failure is summarized in the Table below. This behavior is common for all SOP Classes supported by Print AE.

Table51
Print AE Communication Failure Behavior

Exception	Behavior
Timeout	The association is aborted using A-ABORT and the print-job is marked as failed.
Association aborted by the SCP or network layers	The print-job is marked as failed. The reason is logged and the job failure is reported to the user.

Recommended abbreviations to be used for the tables are:

VNAP Value Not Always Present (attribute sent zero length if no value is present)

ANAP Attribute Not Always Present

ALWAYS Always Present with a value

EMPTY Attribute is sent without a value

Recommended abbreviations to be used for the source of the data values in the tables are:

USER the attribute value source is from User input

AUTO the attribute value is generated automatically

CONFIG the attribute value source is a configurable parameter

PRINTER the attribute value is provided by printer

SOP Specific Conformance for the Printer SOP Class

Print AE supports the following DIMSE operations and notifications for the Printer SOP Class:

- N-GET
- N-EVENT-REPORT

Details of the supported attributes and status handling behavior are described in the following subsections.

Printer SOP Class Operations (N-GET)

Print AE uses the Printer SOP Class N-GET operation to obtain information about the current printer status. The attributes excepted via N-GET are listed in the Table below:

Table52
Printer SOP Class N-GET Request Attribute Identifier List

Attribute Name	Tag
Printer Status	(2110,0010)
Printer Status Info	(2110,0020)
Printer Name	(2110,0030)
Manufacturer	(0008,0070)
Manufacturer Model Name	(0008,1090)
Device Serial Number	(0018,1000)
Software Version(s)	(0018,1020)
Date of Last Calibration	(0018,1200)
Time of Last Calibration	(0018,1201)

The behavior of Print AE when encountering status codes in a N-GET response is summarized in the Table below:

Table53
Printer SOP Class N-GET Response Status Handling Behavior

Service Status	Further Meaning	Error Code	Behavior
Success	Success	0000	The request to get printer status information was success.
Warning	any warning	xxxx	The print-job continues to be printed.
Failure	any failure	xxxx	The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user.

Printer SOP Class Notifications (N-EVENT-REPORT)

Print AE is capable of receiving an N-EVENT-REPORT request at any time during an association. The behavior of Print AE when receiving Event Types within the N-EVENT-REPORT is summarized in the Table 54.

Table 54
Printer SOP Class N-Event-Report Behavior

Event Type Name	Event Type ID	Behavior
Normal	1	The print-job continues to be printed.
Warning	2	The print-job continues to be printed. The contents of Printer Status Info (2110, 0020) is logged and reported to the user via the job-

		control application.
Failure	3	The print-job is marked as failed. The contents of Printer Status Info (2110, 0020) is logged and reported to the user via the job-control application.
*	*	An invalid Event Type ID will cause a status code of 0113H to be returned in a N-EVENT-REPORT response.

The reasons for returning specific status codes in a N-EVENT-REPORT response are summarized in the Table below:

Table 55
Printer SOP Class N-EVENT-REPORT Response Status Reasons

Service Status	Further Meaning	Error Code	Reasons
Success	Success	0000	The notification event has been successfully received.
Failure	No Such Event Type	0113H	An invalid Event Type ID was supplied in the N-EVENT-REPORT request.
Failure	Processing Failure	0110H	An internal error occurred during processing of the N-EVENT-REPORT. A short description of the error will be returned in Error Comment (0000, 0902).

SOP Specific Conformance for the Film Session SOP Class

Print AE supports the following DIMSE operations for the Film Session SOP Class:

- N-CREATE
- N-DELETE

Details of the supported attributes and status handling behavior are described in the following subsections.

Film Session SOP Class Operations (N-CREATE)
The attributes supplied in an N-CREATE Request are listed in the Table below:

Table56
Film Session SOP Class N-CREATE Request Attributes

Attribute Name	Tag	VR	Value	Presence of Value	Source
Number of Copies	(2000,0010)	IS	[1, 100]	ALWAYS	CONFIG
Print Priority	(2000,0020)	CS	LOW, MED,HIGH	ALWAYS	CONFIG
Medium Type	(2000,0030)	CS	BLUE FILM, CLEAR FILM, PAPER	ALWAYS	CONFIG
Film Destination	(2000,0040)	CS	MAGAZINE，PROCESSOR	ALWAYS	CONFIG

The behavior of Print AE when encountering status codes in a N-CREATE response is summarized in the Table below:

Table57
Film Session SOP Class N-CREATE Response Status Handling Behavior

Service Status	Further Meaning	Error Code	Behavior
Success	Success	0000	The SCP has completed the operation successfully.

Service Status	Further Meaning	Error Code	Behavior
Warning	Memory allocation not supported	B600	The N-CREATE operation is considered successful.
Warning	any warning	xxxx	The N-CREATE operation is considered successful.
Failure	any failure	xxxx	The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user.

Film Session SOP Class Operations (N-DELETE)
The behavior of Print AE when encountering status codes in a N-DELETE response is summarized in the Table below:

Table58
Printer SOP Class N-DELETE Response Status Handling Behavior

Service Status	Further Meaning	Error Code	Behavior
Success	Success	0000	The SCP has completed the operation successfully.
Warning	Any warning	xxxx	The N-DELETE operation is considered successful.
Failure	Any failure	xxxx	The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user.

SOP Specific Conformance for the Film Box SOP Class

Print AE supports the following DIMSE operations for the Film Box SOP Class:

- N-CREATE
- N-ACTION
- N-DELETE

Details of the supported attributes and status handling behavior are described in the following subsections.

Film Box SOP Class Operations (N-CREATE)
The attributes supplied in an N-CREATE Request are listed in the Table below:

Table59
Film Box SOP Class N-CREATE Request Attributes

Attribute Name	Tag	VR	Value	Presence of Value	Source
Image Display Format	(2010,0010)	CS	PORTRAIT: STANDARD\1,1 STANDARD\1,2 STANDARD\1,3 STANDARD\2,1 STANDARD\2,2 STANDARD\2,3 STANDARD\2,4 STANDARD\3,3	ALWAYS	CONFIG

Attribute Name	Tag	VR	Value	Presence of Value	Source
			STANDARD\3,4 STANDARD\3,5 STANDARD\3,6 STANDARD\4,4 STANDARD\4,5 STANDARD\4,6 STANDARD\4,7 STANDARD\4,8 STANDARD\5,5 STANDARD\5,6 STANDARD\5,7 STANDARD\5,8 STANDARD\6,6 STANDARD\6,7 STANDARD\6,8 STANDARD\6,9 STANDARD\6,10 STANDARD\7,7 STANDARD\7,8 STANDARD\7,9 STANDARD\7,10 STANDARD\8,8 STANDARD\8,9 STANDARD\8,10 LANDSCAPE: STANDARD\1,1 STANDARD\2,1 STANDARD\3,1 STANDARD\1,2 STANDARD\2,2 STANDARD\3,2 STANDARD\4,2 STANDARD\3,3 STANDARD\4,3 STANDARD\5,3 STANDARD\6,3 STANDARD\4,4 STANDARD\5,4 STANDARD\6,4 STANDARD\7,4 STANDARD\8,4 STANDARD\5,5 STANDARD\6,5 STANDARD\7,5 STANDARD\8,5 STANDARD\6,6 STANDARD\7,6 STANDARD\8,6 STANDARD\9,6		

Attribute Name	Tag	VR	Value	Presence of Value	Source
			STANDARD\10,6 STANDARD\7,7 STANDARD\8,7 STANDARD\9,7 STANDARD\10,7 STANDARD\8,8 STANDARD\9,8 STANDARD\10,8		
Referenced Film Session Sequence	(2010,0500)	SQ		ALWAYS	AUTO
>Referenced SOP Class UID	(0008,1150)	UI	1.2.840.10008.5.1.1.1	ALWAYS	AUTO
>Referenced SOP Instance UID	(0008,1155)	UI	From created Film Session SOP Instance	ALWAYS	AUTO
Film Orientation	(2010,0040)	CS	PORTRAIT or LANDSCAPE	ALWAYS	CONFIG
Film Size ID	(2010,0050)	CS	8INX10IN 8_5INX11IN 10INX12IN 10INX14IN 11INX14IN 11INX17IN 14INX14IN 14INX17IN 24CMX24CM 24CMX30CM A4 A3	ALWAYS	CONFIG
Magnification Type	(2010,0060)	CS	REPLICATE, BILINEAR, CUBIC or NONE	ALWAYS	CONFIG
Max Density	(2010,0130)	US	0 .. 65535	ANAP	CONFIG
Min Density	(2010,0120)	US	0 .. 65535	ANAP	CONFIG
Trim	(2010,0140)	CS	YES or No	ALWAYS	CONFIG
Configuration Information	(2010,0150)	ST	User defined text	ANAP	USER

The behavior of Print AE when encountering status codes in a N-CREATE response is summarized in the Table below:

Table60
Film Box SOP Class N-CREATE Response Status Handling Behavior

Service Status	Further Meaning	Error Code	Behavior
Success	Success	0000	The SCP has completed the operation successfully.
Warning	Requested Min Density or Max Density outside of printer's operating range	B605H	The N-CREATE operation is considered successful.
Warning	Any other warning	xxxx	The N-CREATE operation is considered successful.
Failure	There is an existing Film Box that has not been printed and N-ACTION at the Film Session level is not supported. A new Film Box will not be created when a previous Film Box has not been printed.	C616H	C The association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and the job failure is reported to the user.
Failure	Any failure	xxxx	The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user.

Film Box SOP Class Operations (N-ACTION)
An N-ACTION Request is issued to instruct the Print SCP to print the contents of the Film Box. The Action Reply argument in an N-ACTION response is not evaluated.

The behavior of Print AE when encountering status codes in a N-ACTION response is summarized in the Table below:

Table61
Film Box SOP Class N-ACTION Response Status Handling Behavior

Service Status	Further Meaning	Error Code	Behavior
Success	Success	0000	The SCP has completed the operation successfully. The film has been accepted for printing.
Warning	Film Box SOP Instance hierarchy does not contain Image Box SOP Instances (empty page)	B603H	The N-ACTION operation is considered successful.
Warning	Image size is larger than Image Box size. The image has been demagnified.	B604H	The N-ACTION operation is considered successful.
Warning	Image size is larger than Image Box size. The image has been cropped to fit.	B609H	The N-ACTION operation is considered successful.
Warning	Image size or Combined Print Image Size is larger than Image Box size. The image or combined Print Image	B60AH	The N-ACTION operation is considered successful.

Service Status	Further Meaning	Error Code	Behavior
	has been decimated to fit.		
Warning	Any other warning	xxxx	The N-ACTION operation is considered successful.
Failure	Unable to create Print Job SOP Instance; print queue is full.	C602	The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user.
Failure	Image size is larger than Image Box size.	C603	The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user.
Failure	Combined Print Image Size is larger than Image Box size.	C613	The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user.
Failure	Any other failure	xxxx	The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user.

Film Session SOP Class Operations (N-DELETE)
The behavior of Print AE when encountering status codes in a N-DELETE response is summarized in the Table below:

Table62
Printer SOP Class N-DELETE Response Status Handling Behavior

Service Status	Further Meaning	Error Code	Behavior
Success	Success	0000	The SCP has completed the operation successfully.
Warning	Any warning	xxxx	The N-DELETE operation is considered successful.
Failure	Any other failure	xxxx	The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user.

SOP Specific Conformance for the Image Box SOP Class

Print AE supports the following DIMSE operations for the Image Box SOP Class:

- N-SET

Details of the supported attributes and status handling behavior are described in the following subsections.

Image Box SOP Class Operations (N-SET)
The attributes supplied in an N-SET Request are listed in the Table below:

Table63
Image Box SOP Class N-SET Request Attributes

Attribute Name	Tag	VR	Value	Presence of Value	Source
Image Position	(2020,0010)	US	[1, num_image1]	ALWAYS	AUTO
Basic Grayscale Image Sequence	(2020,0111)	SQ		If the service is configured as MONOCHROME2	AUTO
>Samples Per Pixel	(0028,0002)	US	1	ALWAYS	AUTO
>Photometric Interpretation	(0028,0004)	CS	MONOCHROME2	ALWAYS	CONFIG
>Rows	(0028,0010)	US	Depends on film size	ALWAYS	AUTO
>Columns	(0028,0011)	US	Depends on film size	ALWAYS	AUTO
Pixel Aspect Ratio	(0028,0034)	IS	Set to zero length	VNAP	AUTO
>Bits Allocated	(0028,0100)	US	8	ALWAYS	AUTO
>Bits Stored	(0028,0101)	US	8	ALWAYS	AUTO
>High Bit	(0028,0102)	US	7	ALWAYS	AUTO
>Pixel Representation	(0028,0103)	US	0	ALWAYS	AUTO
>Pixel Data	(7FE0,0010)	OB	Pixels of rendered film sheet	ALWAYS	AUTO
Basic Color Image Sequence	(2020,0111)	SQ		If the service is configured as RGB	AUTO
>Samples Per Pixel	(0028,0002)	US	3	ALWAYS	AUTO
>Photometric Interpretation	(0028,0004)	CS	RGB	ALWAYS	CONFIG
>Planar Configuration	(0028,0006)	US	1	ALWAYS	AUTO
>Rows	(0028,0010)	US	Depends on film size	ALWAYS	AUTO
>Columns	(0028,0011)	US	Depends on film size	ALWAYS	AUTO
Pixel Aspect Ratio	(0028,0034)	IS	Set to zero length	VNAP	AUTO
>Bits Allocated	(0028,0100)	US	8	ALWAYS	AUTO

Attribute Name	Tag	VR	Value	Presence of Value	Source
>Bits Stored	(0028,0101)	US	8	ALWAYS	AUTO
>High Bit	(0028,0102)	US	7	ALWAYS	AUTO
>Pixel Representation	(0028,0103)	US	0	ALWAYS	AUTO
>Pixel Data	(7FE0,0010)	OB	Pixels of rendered film sheet	ALWAYS	AUTO

Note：1 If the attribute of Image Display Format is (STANDARD\m, n), num_image is m*n.

The behavior of Print AE when encountering status codes in a N-SET response is summarized in the Table below:

Table64
Image Box SOP Class N-SET Response Status Handling Behavior

Service Status	Further Meaning	Error Code	Behavior
Success	Success	0000	Image print is successful, The status code is logged and the task success is reported to the user via task management.
Warning	Image size is larger than Image Box size. The image has been demagnified.	B604H	The N-SET operation is considered successful.
Warning	Requested Min Density or Max Density outside of printer's operating range.	B605H	The N-SET operation is considered successful.
Warning	Image size is larger than Image Box size. The image has been cropped to fit.	B609H	The N-SET operation is considered successful.
Warning	Image size or Combined Print Image Size is larger than Image Box size. The image or combined Print Image has been decimated to fit.	B60AH	The N-SET operation is considered successful.
Warning	Any other warning	xxxx	The N-SET operation is considered successful.
Failure	Image size is larger than Image Box size.	C603	The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user.
Failure	Insufficient memory in printer to store the image.	C605	The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user.

Service Status	Further Meaning	Error Code	Behavior
Failure	Combined Print Image Size is larger than Image Box size.	C613	The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user.
Failure	Any other failure	xxxx	The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user.

Activity – Send Find Request

Description and Sequencing of Activities

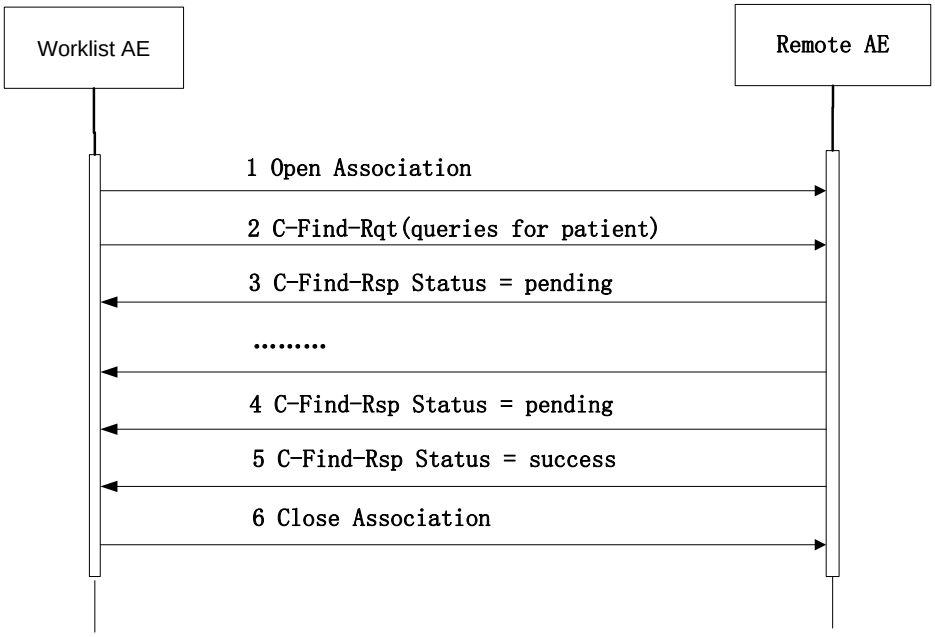

Figure5
Sequencing of Activity – Send FIND Request

A possible sequence of interactions between the Worklist AE and a remote AE (e.g. a system such as a RIS or HIS; or a PACS) is illustrated in the Figure below:

The Worklist AE opens an association with the remote AE

The Worklist AE sends a C-FIND request to the remote AE containing the Query attributes.

The remote AE returns a C-FIND response containing the requested attributes of the first matching Item.

The remote AE returns another C-FIND response containing the requested attributes of the second matching Item. And then another one.

When the remote AE returns all the C-FIND responses with status Success indicating that no further matching Items exist.

The C-Find AE closes the association with the remote AE.

Proposed Presentation Contexts

Table65
Proposed Presentation Contexts for Worklist AE

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name**	**UID**		
Modality Worklist Information Model–Find	1.2.840.10008.5.1.4.31	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None

Worklist AE will propose Presentation Contexts for the SOP Classes listed above. For these SOP Class, Worklist AE will propose multiple Presentation Contexts, one for each of the supported Transfer Syntaxes.

If Worklist AE is offered a choice of Transfer Syntaxes in the accepted Presentation Contexts, it will apply the first encountered to use for the C-FIND operation.

SOP Specific Conformance

Table66
C_FIND Response Status Handling Behavior

Service Status	Further Meaning	Error Code	Behavior (as SCU)
Refused	Out of resources	A700	The association is aborted using A-ABORT and a notify message is displayed: Some errors happen when query worklist server.
Failed	Identifier Does Not Match SOP Class	A900	
Failed	Unable to process	Cxxx	
Cancel	Matching terminated due to Cancel request	FE00	/
Success	Matching is complete - No final Identifier is supplied.	0000	Patient lists show on the UI
Pending	Matches are continuing - Current Match is supplied and any Optional Keys were supported in the same manner as Required Keys.	FF00	The worklist item contained in the Identifier is collected for later display or further processing.

Service Status	Further Meaning	Error Code	Behavior (as SCU)
Pending	Matches are continuing - Warning that one or more Optional Keys were not supported for existence for this Identifier.	FF01	The worklist item contained in the Identifier is collected for later display or further processing.
*	The Association is aborted using A-ABORT and the query is marked as failed. The status meaning is logged and reported to the user if an interactive query. Any additional error information in the Response will be logged.	Any other status code.	The association is aborted using A-ABORT and a notify message is displayed: Some errors happen when query worklist server.

Worklist AE provides Standard Conformance to the Storage Service Class.

Worklist AE will behave as described in the Table66 in response to the status returned in the C-FIND response command message.

The behavior of Ultrasound System during communication failure is summarized in the Table below.

Table 67
COMMUNICATION FAILURE BEHAVIOR FOR WORKLIST AE

Exception	Behavior
Timeout	The Association is aborted using A-ABORT and the query marked as failed. The reason is logged and reported to the user if an interactive query.
Association aborted by the SCP or network layers	The query is marked as failed. The reason is logged and reported to the user if an interactive query.

The Table below provides a description of the Ultrasound system Query Request Identifier and specifies the attributes that are copied into the images. Unexpected attributes returned in a C-FIND response are ignored.

Requested return attributes not supported by the SCP are set to have no value. Non-matching responses returned by the SCP due to unsupported optional matching keys are ignored. No attempt is made it filter out possible duplicate entries.

Table 68
Worklist Request Identifier

ATTRIBUTE	VR	ATTRIBUTE NAME	MATCHING KEYS	RETURN KEYS
Module: Patient Identification Module (M)				
(0010,0010)	PN	Patient's Name	configurable	X (DI)
(0010,0020)	LO	Patient ID	configurable	X(DI)
(0010,1000)	LO	Other Patient IDs		X (DI)

ATTRIBUTE	VR	ATTRIBUTE NAME	MATCHING KEYS	RETURN KEYS
Module: Patient Demographic Module (M)				
(0010,0030)	DA	Patient's Birth Date		X(DI)
(0010,0032)	TM	Patient's Birth Time		X(DI)
(0010,0040)	CS	Patient's Sex		X(DI)
(0010,1020)	DS	Patient's Size		X (DI)
(0010,1030)	DS	Patient's Weight		X (DI)
(0010,2160)	SH	Ethnic Group		X (DI)
(0010,4000)	LT	Patient Comments		X (DI)
(0040,3001)	LO	Confidentiality constraint on patient data Description		X (DI)
Module: Patient Medical Module (M)				
(0010,2000)	LO	Medical Alerts		X (DI)
(0010,2110)	LO	Contrast Allergies		X (DI)
(0010,21B0)	US	Additional Patient's History		X (DI)
(0010,21C0)	US	Pregnancy Status		X (DI)
(0010,21D0)	DA	Last Menstrual Date		X (DI)
(0038, 0050)	LO	Special Needs		X (DI)
(0038, 0500)	LO	Patient State		X (DI)
Module: Visit Relationship Module (M)				
(0008,1120)	SQ	Referenced Patient Sequence		X (DI)
Module: Visit Identification Module (M)				
(0038,0010)	LO	Admission ID		X (DI)
Module: Visit Status Module (M)				
(0038,0300)	LO	Current Patient Location		X (DI)
Module: Visit Admission Module (M)				
(0008,1080)	LO	Admitting Diagnosis Description		X (DI)
Module: Scheduled Procedure Step Module (M)				
(0040,0100)	SQ	Scheduled Procedure Step Sequence		X (DI)
>(0008,0060)	CS	Modality	Configurable and the default is set to "US"	
>(0032,1070)	LO	Requested Contrast Agent		X (DI)

ATTRIBUTE	VR	ATTRIBUTE NAME	MATCHING KEYS	RETURN KEYS
>(0040,0001)	AE	Scheduled Station AE Title	configurable	X (DI)
>(0040,0002)	DA	Scheduled Procedure Step Start Date	configurable and the default is set to today's date	X(DI)
>(0040,0003)	TM	Scheduled Procedure Step Start Time		X (DI)
>(0040,0004)	DA	Scheduled Procedure Step End Date		X (DI)
>(0040,0005)	TM	Scheduled Procedure Step End Time		X (DI)
>(0040,0006)	PN	Scheduled Performing Physician's Name		X (DI)
>(0040,0007)	LO	Scheduled Procedure Step Description		X(DI)
>(0040,0008)	SQ	Scheduled Protocol Code Sequence		X (DI)
> >(0008,0100)	SH	Code Value		X (DI)
> >(0008,0102)	SH	Coding Scheme Designator		X (DI)
> >(0008,0103)	SH	Coding Scheme Version		X (DI)
> >(0008,0104)	LO	Code Meaning		X (DI)
>(0040,0009)	SH	Scheduled Procedure Step ID		X (DI)
>(0040,0010)	SH	Scheduled Station Name		X (DI)
>(0040,0011)	SH	Scheduled Procedure Step Location		X (DI)
>(0040,0012)	LO	Pre-Medication		X (DI)
> (0040,0020)	CS	Scheduled Procedure Step Status		X (DI)
> (0040,0400)	LT	Comments on the Scheduled Procedure Step		X (DI)
Module: Requested Procedure Module (M)				
(0008,1110)	SQ	Referenced Study Sequence		X (DI)
> (0008,1150)	UI	Referenced SOP Class UID		X (DI)
> (0008,1155)	UI	Referenced SOP		X (DI)

ATTRIBUTE	VR	ATTRIBUTE NAME	MATCHING KEYS	RETURN KEYS
		Instance UID		
(0020,000D)	UI	Study Instance UID		X (DI)
(0032,1060)	LO	Requested Procedure Description		X (DI)
(0032,1064)	SQ	Requested Procedure Code Sequence		X (DI)
> (0008,0100)	SH	Code Value		X (DI)
> (0008,0102)	SH	Coding Scheme Designator		X (DI)
>(0008,0103)	SH	Coding Scheme Version		X (DI)
>(0008,0104)	LO	Code Meaning		X (DI)
(0040,1001)	SH	Requested Procedure ID	configurable	X (DI)
(0040,1003)	SH	Requested Procedure Priority		X (DI)
(0040,1004)	LO	Patient Transport Arrangements		X (DI)
(0040,1400)	LT	Requested Procedure Comments		X (DI)
Module: Imaging Service Request Module (M)				
(0008,0050)	SH	Accession Number	configurable	X (DI)
(0008,0090)	PN	Referring Physician's Name		X (DI)
(0032,1032)	PN	Requesting Physician		X (DI)
(0032,1033)	LO	Requesting Service		X (DI)
(0040,2400)	LT	Imaging Service Request Comments		X (DI)
Module: SOP Common Module (M)				
(0008,0005)	CS	Specific Character Set		X (DI)
Module: Additional Attributes Module (M)				
(0008,0032)	TM	Acquisition Time		X (DI)

The convention used for Matching Keys is:

X - Return keys. An " X " indicates that MODALITY supplies this attribute as a Return Key with zero length for Universal Matching.

DI – Display to the user.

Activity – Send MPPS Request

Description and Sequencing of Activities

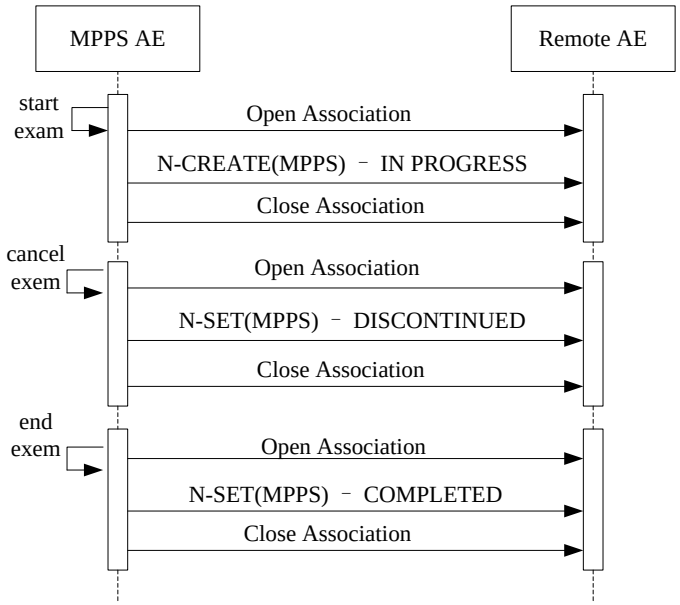

Figure6
Sequencing of Activity – MPPS progress

A possible sequence of interactions between the MPPS AE and a Remote AE(Departmental Scheduler, e.g. a device such as a RIS or HIS which supports the MPPS SOP Class as an SCP) is illustrated in Figure B.4.2-4:

The MPPS AE opens an association with the Remote AE.

The MPPS AE sends an N-CREATE request to the Remote AE to create an MPPS instance with status of “IN PROGRESS” and create all necessary attributes. The Remote AE acknowledges the MPPS creation with an N-CREATE response (status success).

The MPPS AE closes the association with the Remote AE.

All images are acquired and stored in the local database.

The MPPS AE opens an association with the Remote AE.

The MPPS AE sends an N-SET request to the Remote AE to update the MPPS instance with status of “COMPLETED” and set all necessary attributes. The Departmental Scheduler acknowledges the MPPS update with an N-SET response (status success).

The MPPS AE closes the association with the Remote AE.

Note: The Cancel and End Exam commands are mutually exclusive. They are both represented here for illustration purposes only. Actual workflow uses one or the other for a given exam.

For each exam step transfer, an attempt will be made to transmit it to the selected remote AE. If it fails, it will automatically retry specific times if configured on Preset UI.

Proposed Presentation Contexts

Table69
Proposed Presentation Contexts for MPPS AE

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name**	**UID**		
Modality Performed Procedure Step SOP Class	1.2.840.10008.3.1.2.3.3	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None

MPPS-SCU will propose Presentation Contexts for the SOP Classes listed above. For these SOP Class, MPPS-SCU will propose multiple Presentation Contexts, one for each of the supported Transfer Syntaxes.

If MPPS AE is offered a choice of Transfer Syntaxes in the accepted Presentation Contexts, it will apply the first encountered to use for the MPPS AE operation.

SOP Specific Conformance

MPPS AE provides Standard Conformance to the MPPS Service Class.

MPPS-SCU will behave as described in the Table below in response to the status returned in the N-Create or N-Set response command message.

Table 70
MPPS N-CREATE / N-SET Response Status Handling Behavior

Service Status	Further Meaning	Error Code	Behavior
Success	Success	0000	The SCP has completed the operation successfully.
Failure	Processing Failure – Performed Procedure Step Object may no longer be updated	0110	The Association is aborted using A-ABORT and the MPPS is marked as failed. The status meaning and Additional information in the Response is logged (i.e. Error Comment and Error ID).
Warning	Attribute Value Out of Range	0116H	The MPPS operation is considered successful but the status meaning is logged. Additional information in the Response identifying the attributes out of range will be logged (i.e. Elements in the Modification List/Attribute List)

Service Status	Further Meaning	Error Code	Behavior
*	*	Any other status code.	The Association is aborted using A-ABORT and the MPPS is marked as failed. The status meaning is logged.

The behavior of MPPS AE during communication failure is summarized in the Table below:

Table 71
MPPS COMMUNICATION FAILURE BEHAVIOR

Exception	Behavior
Timeout	The Association is aborted using A-ABORT and MPPS marked as failed. The reason is logged.
Association aborted by the SCP or network layers	The MPPS is marked as failed. The reason is logged.

Table below provides a description of the MPPS N-CREATE and N-SET request identifiers sent by ultrasound system. Empty cells in the N-CREATE and N-SET columns indicate that the attribute is not sent. An “x” indicates that an appropriate value will be sent. A “Zero length” attribute will be sent with zero length.

Table 72
MPPS N-CREATE / N-SET Request Identifier

Attribute Name	Tag	Req. Type N-CREATE	Req. Type N-SET
Module: Performed Procedure Step Relationship Module (M)			
Referenced Patient Sequence	(0008,1120)	2 (Default is set to null)	Not allowed
Patient’s Name	(0010,0010)	2	Not allowed
Patient ID	(0010,0020)	2	Not allowed
Patient’s Birth Date	(0010,0030)	2	Not allowed
Patient’s Sex	(0010,0040)	2	Not allowed
Scheduled Step Attribute Sequence	(0040,0270)	1	Not allowed
>Accession Number	(0008,0050)	2	Not allowed
>Referenced Study Sequence	(0008,1110)	2	Not allowed
>Study Instance UID	(0020,000D)	1	Not allowed
>Requested Procedure Description	(0032,1060)	2	Not allowed
>Scheduled Procedure Step Description	(0040,0007)	2	Not allowed
>Scheduled Protocol Code Sequence	(0040,0008)	2	Not allowed
>Scheduled Procedure Step ID	(0040,0009)	2	Not allowed
>Requested Procedure ID	(0040,1001)	2	Not allowed
Module: Image Acquisition Results Module (M)			
Modality	(0008,0060)	1	Not allowed
Study ID	(0020,0010)	2	Not allowed

Attribute Name	Tag	Req. Type N-CREATE	Req. Type N-SET
Performed Protocol Code Sequence	(0040,0260)	2 (Default is set to null)	3
Performed Series Sequence	(0040,0340)	2	3
>Retrieve AE Title	(0008,0054)	2 (Default is set to null)	2
>Series Description	(0008,103E)	2 (Default is set to null)	2
>Performing Physician's Name	(0008,1050)	2	2
>Operators' Name	(0008,1070)	2	2
>Referenced Image Sequence	(0008,1140)	2	2
>Protocol Name	(0018,1030)	1	1
>Series Instance UID	(0020,000E)	1	1
>Referenced Non-Image Composite SOP Instance Sequence	(0040,0220)	2 (Default is set to null)	2
Module: Billing And Material Management Code Module (M)			
Billing Procedure Step Sequence	(0040,0320)	3	3
Film Consumption Sequence	(0040,0321)	3	3
Billing Supplies and Devices Sequence	(0040,0324)	3	3
Module: Performed Procedure Step Information Module (M)			
Procedure Code Sequence	(0008,1032)	2 (Default is set to null)	3
Performed Station AE Title	(0040,0241)	1	Not allowed
Performed Station Name	(0040,0242)	2 (Default is set to null)	Not allowed
Performed Location	(0040,0243)	2 (Default is set to null)	Not allowed
Performed Procedure Step Start Date	(0040,0244)	1	Not allowed
Performed Procedure Step Start Time	(0040,0245)	1	Not allowed
Performed Procedure Step End Date	(0040,0250)	2 (Default is set to null)	3
Performed Procedure Step End Time	(0040,0251)	2	3
Performed Procedure Step Status	(0040,0252)	1	3
Performed Procedure Step ID	(0040,0253)	1	Not allowed
Performed Procedure Step Description	(0040,0254)	2 (Default is set to null)	3
Performed Procedure Type Description	(0040,0255)	2 (Default is set to null)	3
Performed Procedure Step Discontinuation Reason Code Sequence	(0040,0281)	3	3
Module: SOP Common Module (M)			
Specific Character Set	(0008,0005)	1C (Required if an extended or replacement character set is used)	Not allowed

Activity – Query/Retrieve from Remote AE

Description and Sequencing of Activities for SCU

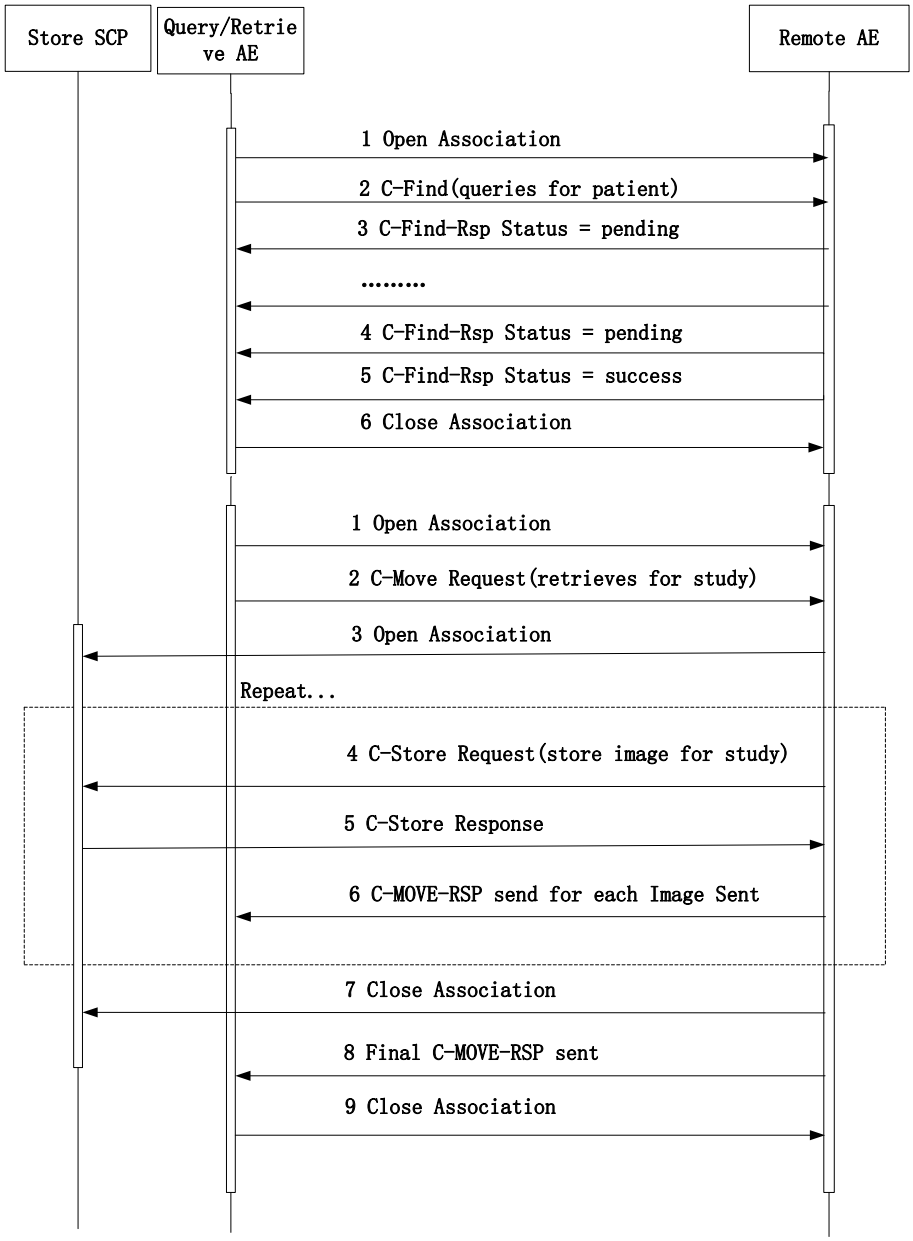

Figure7
Sequencing of Activity – Query/Retrieve progress

The associated Real-World activity is a C-Find request initiated by the user. The user specifies some attributes the system should use to query its database. If the query user successfully establishes an association to the remote AE, it will send a C-Find request (according to the query model) and will then return the results to the application.

The C-MOVE-RQs are used to retrieve the referenced instances. The Query/Retrieve AE supports the Study Root Information Model.

Proposed Presentation Contexts

Table73
Proposed Presentation Contexts for Query/Retrieve AE

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name**	**UID**		
Study Root Query/Retrieve Information Model - Find	1.2.840.10008.5.1.4.1.2.2.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
Study Root Query/Retrieve Information Model - Move	1.2.840.10008.5.1.4.1.2.2.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None

SOP Specific Conformance

The ultrasound system provides Standard Conformance to the DICOM Query/Retrieve Class.

Response Status
Query/Retrieve AE will behave as described in the Table below in response to the status returned in the C-Find response command message.

Table74
C-Find Response Status Handling Behavior

Service Status	Meaning	Protocol Codes	Related Fields	Behavior (as SCU)
Refused	Refused Out of Resources	A700	(0000,0902)	The association is aborted using A-ABORT and a notify message is displayed: The remote server error.
Failed	Identifier does not match SOP Class	A900	(0000,0901) (0000,0902)	
	Unable to process	CXXX	(0000,0901) (0000,0902)	
Canceling	Matching terminated due to Cancel request	FE00	None	
Success	Matching is complete - No final Identifier is supplied	0000	None	Patient lists show on the UI
Pending	Matches are continuing - Current Match is supplied and any Optional Keys were supported in the same manner as Required Keys	FF00	Identifier	/

Service Status	Meaning	Protocol Codes	Related Fields	Behavior (as SCU)
	Matches are continuing - Warning that one or more Optional Keys were not supported for existence and/or matching for this identifier	FF01	Identifier	/

The ultrasound system supports the following query levels:

- Study

The Query/Retrieve AE interprets the following status codes:

Table75
C-Move Response Status Handling Behavior

Service Status	Meaning	Protocol Codes	Related Fields	Behavior (as SCU)
Refused	Refused Out of Resources	A700	(0000,0902)	The association is aborted using A-ABORT and a notify message is displayed: The remote server error.
Failed	Identifier does not match SOP Class	A900	(0000,0901) (0000,0902)	
	Unable to process	CXXX	(0000,0901) (0000,0902)	
Canceling	Matching terminated due to Cancel request	FE00	None	
Success	Matching is complete - No final Identifier is supplied	0000	None	Image retrieve is successful, Patient lists show on the UI
Pending	Matches are continuing - Current Match is supplied and any Optional Keys were supported in the same manner as Required Keys	FF00	Identifier	/
	Matches are continuing - Warning that one or more Optional Keys were not supported for existence and/or matching for this identifier	FF01	Identifier	/

Study Root Query/Retrieve Attributes

Supported Matching

Following are the types of matching that can be request by the implementation:

- Single Value matching
- Universal Matching
- Wild Card Matching
- Range of date, Range of Time

The user can filter the downloaded C-FIND result, to view a limited set of the result.

Study Level

This section defines the keys at the Study Level of the Study Root Query/Retrieve Information Model that are supported by this implementation.

Table 76
Study Level Attributes

MODULE: STUDY ROOT INFORMATION MODEL (M)					
Attribute	**VR**	**Type**	**Attribute Name**	**Value**	**Matching keys**
Module: Study Root Information Model (M)					
(0008,0020)	DA	R	Study Date		DA(SK)
(0008,0030)	TM	R	Study Time		N
(0010,0010)	PN	R	Patient's Name		*(SK)
(0010,0020)	LO	R	Patient ID		S(SK)
(0008,0050)	SH	R	Accession Number		*(SK)
(0010,0030)	DA	O	Patient's Birth Date		S(SK)
(0010,0040)	CS	O	Patient's Sex		S(SK)
(0020,0010)	SH	R	Study ID		S(SK)
(0020,000D)	UI	U	Study Instance UID		N
(0008,0061)	CS	O	Modalities in Study	US	N
(0008,0090)	PN	O	Referring Physician's Name		N
(0008,1030)	LO	O	Study Description		N
(0008,1032)	SQ	O	Procedure Code Sequence		N
(0008,1060)	PN	O	Name of Physician(s) Reading Study		N
(0008,1080)	LO	O	Admitting Diagnoses Description		N
(0008,1110)	SQ	O	Referenced Study Sequence		N
(0008,1120)	SQ	O	Referenced Patient Sequence		N
(0010,0021)	LO	O	Issuer of Patient ID		N
(0010,0032)	TM	O	Patient's Birth Time		N
(0010,1000)	LO	O	Other Patient IDs		N
(0010,1001)	PN	O	Other Patient Names		N
(0010,1010)	AS	O	Patient's Age		N
(0010,1020)	DS	O	Patient's Size		N
(0010,1030)	DS	O	Patient's Weight		N
(0010,2160)	SH	O	Ethnic Group		N
(0010,2180)	SH	O	Occupation		N
(0010,21B0)	LT	O	Additional Patient History		N
(0010,4000)	LT	O	Patient Comments		N
(0020,1070)	IS	O	Other Study Numbers		N
(0020,1200)	IS	O	Number of Patient Related Studies		N
(0020,1202)	IS	O	Number of Patient Related Series		N
(0020,1204)	IS	O	Number of Patient Related Instances		N
(0020,1206)	IS	O	Number of Study Related Series		N
(0020,1208)	IS	O	Number of Study Related Instances		N
(4008,010C)	PN	O	Interpretation Author		N

Module: Additional Attributes Module (O)					
(0008,0062)	UN	O	SOP Classes in Study		N

Series Level Attributes

Table 77
Series Level Attributes

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE	MATCHING KEYS
Module: Study Root Information Model (M)					
(0020,000D)	UI	U	Study Instance UID		S
(0020,000E)	UI	U	Series Instance UID		N
(0008,0060)	CS	R	Modality		N
(0020,0011)	IS	R	Series Number		N
(0020,1209)	IS	O	Number of Series Related Instances		N
Module: Additional Attributes Module (O)					
(0008,0021)	DA	O	Series Date		N
(0008,0031)	TM	O	Series Time		N

Composite Object Instance Level

Table 78
Composite Object Instance Level Attributes

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE	MATCHING KEYS
Module: Study Root Information Model (M)					
(0020,000D)	UI	U	Study Instance UID		S
(0020,000E)	UI	U	Series Instance UID		S
(0008,0018)	UI	U	SOP Instance UID		N
(0020,0013)	IS	R	Instance Number		N
Module: Additional Attributes Module (O)					
(0008,0016)	UI	O	SOP Class UID		N
(0008,001A)	UI	O	Related General SOP Class UID		N
(0008,3001)	SQ	O	Alternate Representation Sequence		N
>(0008,1150)	UI	O	Referenced SOP Class UID		N
>(0008,1155)	UI	O	Referenced SOP Instance UID		N
>(0020,000E)	UI	O	Series Instance UID		N
>(0040,A170)	SQ	O	Purpose of Reference Code Sequence		N
>>(0008,0100)	SH	O	Code Value		N
>>(0008,0102)	SH	O	Coding Scheme Designator		N
>>(0008,0103)	SH	O	Coding Scheme Version		N

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE	MATCHING KEYS
>>(0008,0104)	LO	O	Code Meaning		N
(0040,A043)	SQ	O	Concept Name Code Sequence		N
>(0008,0100)	SH	O	Code Value		N
>(0008,0102)	SH	O	Coding Scheme Designator		N
>(0008,0103)	SH	O	Coding Scheme Version		N
>(0008,0104)	LO	O	Code Meaning		N
(0040,A504)	SQ	O	Content Template Sequence		N
>(0008,0105)	CS	O	Mapping Resource		N
>(0040,DB00)	CS	O	Template Identifier		N

4.2.1.4 Association Acceptance Policy

Activity – Receive Echo Request

Description and Sequencing of Activities

The Verification AE (as SCP) accepts associations only if they have valid Presentation Contexts. If Verification AE (as SCP) receives an echo (C-ECHO) request then the response will be sent over the same association used to send the C-ECHO-RQ.

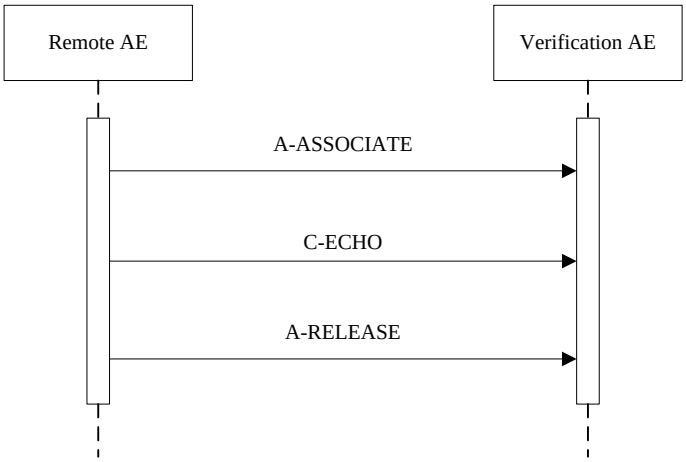

Figure8
Sequencing of Activity – Receive Echo Request

Accepted Presentation Contexts

It will accept Presentation Contexts as shown in the following table:

Table79
Proposed Presentation Contexts for Activity Verification

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Verification	1.2.840.10008.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None

		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None

SOP Specific Conformance

The Application conforms to the definition of a Verification SCP in accordance with the DICOM Standard.

Activity – Receive Storage

Description and Sequencing of Activities

The system could act as Sorage SCP in Query/Retrieve, otherwise couldn't. A possible sequence of interactions between the Storage AE (as SCP) and a remote AE is illustrated in the Figure7.

Accepted Presentation Contexts

The Storage AE (as SCP) will accept Presentation Contexts as shown in the Table below.

Table80
Proposed Presentation Contexts for Storage

PROPOSED PRESENTATION CONTEXTS					
Abstract Syntax		**Transfer Syntax**		**Role**	**Ext. Neg.**
Name	**UID**	**Name**	**UID**		
US Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
		JPEG Lossy, Baseline Sequential with Huffman Coding (Process 1)	1.2.840.10008.1.2.4.50	SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1])	1.2.840.10008.1.2.4.70	SCP	None
		RLE Lossless	1.2.840.10008.1.2.5	SCP	None
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90	SCP	None
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91	SCP	None
US Multiframe Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
		JPEG Lossy, Baseline Sequential with Huffman Coding (Process 1)	1.2.840.10008.1.2.4.50	SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1])	1.2.840.10008.1.2.4.70	SCP	None

		RLE Lossless	1.2.840.10008.1.2.5	SCP	None
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90	SCP	None
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91	SCP	None
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
		JPEG Lossy, Baseline Sequential with Huffman Coding (Process 1)	1.2.840.10008.1.2.4.50	SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1])	1.2.840.10008.1.2.4.70	SCP	None
		RLE Lossless	1.2.840.10008.1.2.5	SCP	None
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90	SCP	None
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91	SCP	None
Comprehensive Structured Report Storage	1.2.840.10008.5.1.4.1.1.88.33	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
		JPEG Lossy, Baseline Sequential with Huffman Coding (Process 1)	1.2.840.10008.1.2.4.50	SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1])	1.2.840.10008.1.2.4.70	SCP	None
		RLE Lossless	1.2.840.10008.1.2.5	SCP	None
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90	SCP	None
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91	SCP	None
Encapsulated PDF Storage	1.2.840.10008.5.1.4.1.1.104.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
		JPEG Lossy, Baseline Sequential with Huffman Coding (Process 1)	1.2.840.10008.1.2.4.50	SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1])	1.2.840.10008.1.2.4.70	SCP	None
		RLE Lossless	1.2.840.10008.1.2.5	SCP	None
		JPEG 2000 Image Compression (Lossless	1.2.840.10008.1.2.4.90	SCP	None

		Only)			
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91	SCP	None

Note：The sytem could not support to brower the Encapsulated PDF.

SOP Specific Conformance

The Application conforms to the definition of a Storage SCP in accordance with the DICOM Standard.

Activity – Receive Storage Commitment

Description and Sequencing of Activities

A possible sequence of interactions between the Storage Commitment AE and a remote AE is illustrated in the Figure3 Sequencing of Activity – Send Storage Request.

Accepted Presentation Contexts

The Storage Commitment AE will accept Presentation Contexts as shown in the Table below.

Table 81
Acceptable Presentation Contexts for
Activity Receive Storage Commitment Response

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Ext. Neg.**
Name	**UID**	**Name List**	**UID List**		
Storage Commitment Push Model	1.2.840.10008.1.20.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None

The Storage Commitment AE will only accept the SCU role within a Presentation Context for the Storage Commitment Push Model SOP Class.

SOP Specific Conformance

Storage Commitment Operations (N-ACTION)
The Storage Commitment AE will request storage commitment for the configured device.

The behavior of Storage Commitment AE when receiving N-Action response status codes is summarized in the Table below:

Table 82
Storage Commitment N-ACTION Response Status Handling Behavior

Service Status	Further Meaning	Error Code	Behavior
Success	Success	0000	The request for storage comment is considered successfully sent. The ultrasound system waits for the N-EVENT-REPORT in background.
*	*	Any other status code.	The request for storage comment is failed.

The behavior of Storage Commitment AE during communication failure is summarized in the Table below:

Table 83
Storage Commitment Communication Failure Behavior

Exception	Behavior
Timeout	The Association is aborted using A-ABORT and the send job is marked as failed.
Association aborted by the SCP or network layers	The send job is marked as failed.

Storage Commitment Tags (N-ACTION)
The Storage Commitment AE will request storage commitment using the following tags

NOTE: Storage Commitment may only be automatically requested upon successful completion of an end exam storage task,

Table 84
Storage Commitment N-Action-Request Message Contents

Action Type Name	Event Type ID	Attribute	Tag
N-ACTION-RQ (M)	1	Requested SOP Class UID	(0000,0003)
		Requested SOP Instance UID	(0000,1001)
Module: Additional Attributes Module (O)	3	Instance Creation Date	(0008,0012)
		Instance Creation Time	(0008,0013)
Request Storage Commitment	1	Transaction UID	(0008,1195)
		Referenced SOP Sequence	(0008,1199)
		>Referenced SOP Class UID	(0008,1150)
		>Referenced SOP Instance UID	(0008,1155)

Storage Commitment Notifications (N-EVENT-REPORT)
The reasons for returning specific status codes in a N-EVENT-REPORT response are summarized in the Table below.

Table 85
Storage Commitment N-EVENT-REPORT Response Status Reasons

Service Status	Further Meaning	Error Code
Success	N-EVENT-REPORT message operate success.	0000
Failed	N-EVENT-REPORT message operate failed.	0110

Storage Commitment Tags (N-EVENT- REPORT)
Tags supported for receiving an N-Event-Report message.

Table 86

Storage Commitment N-Event-Report Message Contents

EVENT TYPE NAME	EVENT TYPE ID	ATTRIBUTE	TAG	REQUIREMENT TYPE SCP
Storage Commitment Request Successful	1	Transaction UID	(0008,1195)	1
		Referenced SOP Sequence	(0008,1199)	1
		>Referenced SOP Class UID	(0008,1150)	1
		>Referenced SOP Instance UID	(0008,1155)	1
Storage Commitment Request Complete – Failures Exist	2	Transaction UID	(0008,1195)	1
		Referenced SOP Sequence	(0008,1199)	1
		>Referenced SOP Class UID	(0008,1150)	1
		>Referenced SOP Instance UID	(0008,1155)	1
		Failed SOP Sequence	(0008,1198)	1
		>Referenced SOP Class UID	(0008,1150)	1
		>Referenced SOP Instance UID	(0008,1155)	1
		>Failure Reason	(0008,1197)	1

4.3 Network Interfaces

4.3.1 Supported Communications Stacks

Modality DICOM AEs provide DICOM 3.0 TCP/IP Network Communication Support as defined in Part 8 of the DICOM Standard.

4.3.2 TCP/IP Stack

Modality DICOM AEs inherit their TCP/IP stack from the Windows 7 Operating System upon which they execute.

4.3.3 Physical Network Interface

Modality supports a single network interface. One of the following physical network interfaces will be available depending on installed hardware options:

Table87
Supported Physical Network Interfaces

ETHERNET 1000BASET
Ethernet 100baseT
Ethernet 10baseT

4.3.4 Additional Protocols

Modality does not support additional protocols.

4.4 Configuration

The Configuration Utility allows the service engineer to set and maintain configuration parameters of local and remote DICOM application entities.

4.4.1 AE Title/Presentation Address Mapping

This mapping (including IP and port numbers) is defined during the system Network Configuration procedure.

4.4.2 Configurable Parameters

Localhost DICOM Service Property(Including SCU and SCP):

AE Title

Port

PDU

Server Setting:

Device

IP address

Storage:

Device, Service name, AE Title and Port.

Timeout.

Maximum retries. (default value is 3)

Interval Time (In this version, this parameter is not usable.)

Compression Mode, Compression Ratio.

Color Mode (Color, Mixed, or Gray).

Cine Zoom Mode (original, 640*480, 800*600 or 1024*768)

Allow Multiframe(Enable or not)

Max Framerate(options(25, 30, 35, full), or other inputed valid value)

3D/4D(Normal, Rawdata or Volume)

SR Storage Option(“Attach SR When Store Images”, “Only Store SR”, and “Not Store SR")

Encapsulated PDF(Enable or not)

Storage Mode(“Parallel file”, “Parallel frame”,and “Serial file”)

Default Service Status (Y/N)

Print:

Device, Service name, AE Title and Port .

Timeout.

Maximum retries. (default value is 3)

Interval Time (In this version, this parameter is not usable.)

Media Type: PAPER, CLEAR FILM, or BLUE FILM

Film Size:
8INX10IN
8_5INX11IN
10INX12IN
10INX14IN
11INX14IN
11INX17IN
14INX14IN
14INX17IN
24CMX24CM
24CMX30CM
A4
A3

Copies:1-100

Max Density: 0-65535

Min Density:0-65535

Settings: RGB or MONOCHROME2

Display Format:

PORTRAIT:
STANDARD\1,1
STANDARD\1,2
STANDARD\1,3
STANDARD\2,1
STANDARD\2,2
STANDARD\2,3
STANDARD\2,4
STANDARD\3,3
STANDARD\3,4
STANDARD\3,5
STANDARD\3,6
STANDARD\4,4
STANDARD\4,5
STANDARD\4,6
STANDARD\4,7
STANDARD\4,8
STANDARD\5,5

STANDARD\5,6
STANDARD\5,7
STANDARD\5,8
STANDARD\6,6
STANDARD\6,7
STANDARD\6,8
STANDARD\6,9
STANDARD\6,10
STANDARD\7,7
STANDARD\7,8
STANDARD\7,9
STANDARD\7,10
STANDARD\8,8
STANDARD\8,9
STANDARD\8,10

LANDSCAPE:

STANDARD\1,1
STANDARD\1,1
STANDARD\2,1
STANDARD\3,1
STANDARD\1,2
STANDARD\2,2
STANDARD\3,2
STANDARD\4,2
STANDARD\3,3
STANDARD\4,3
STANDARD\5,3
STANDARD\6,3
STANDARD\4,4
STANDARD\5,4
STANDARD\6,4
STANDARD\7,4
STANDARD\8,4
STANDARD\5,5
STANDARD\6,5
STANDARD\7,5
STANDARD\8, 5
STANDARD\6,6
STANDARD\7,6
STANDARD\8,6
STANDARD\9,6
STANDARD\10,6
STANDARD\7,7
STANDARD\8,7
STANDARD\9,7
STANDARD\10,7
STANDARD\8,8
STANDARD\9,8
STANDARD\10,8

Destination: MAGAZINE or PROCESSOR

Film Orientation: LANDSCAPE or PORTRAIT

Priority: HIGH, MED, or LOW

Configuration Info

Magnification Type: NONE, CUBIC, REPLICATE, or BILINEAR

Trim: Yes/Not

Default Status (Y/N)

WORKLIST:

Device, Service name, AE Title and Port .

Timeout.

Maximum retries, Interval Time (In this version, these two parameters are not usable.)

Default Status (Y/N)

MPPS:

Device, Service name, AE Title and Port.

Timeout,

Maximum retries (default value is 3)

Interval Time (In this version, this parameter is not usable.)

Default Status (Y/N)

Storage Commitment:

Device, Service name, AE Title and Port.

Timeout.

Maximum retries, Interval Time (In this version, these two parameters are not usable.)

Associated Storage Service

Default Status (Not available)

Query/Retrieve

Device, Service name, AE Title and Port.

Timeout.

Maximum retries, Interval Time (In this version, these two parameters are not usable.)

Default Status (Y/N)

5 MEDIA INTERCHANGE

5.1 Implementation Model

5.1.1 Application Data Flow

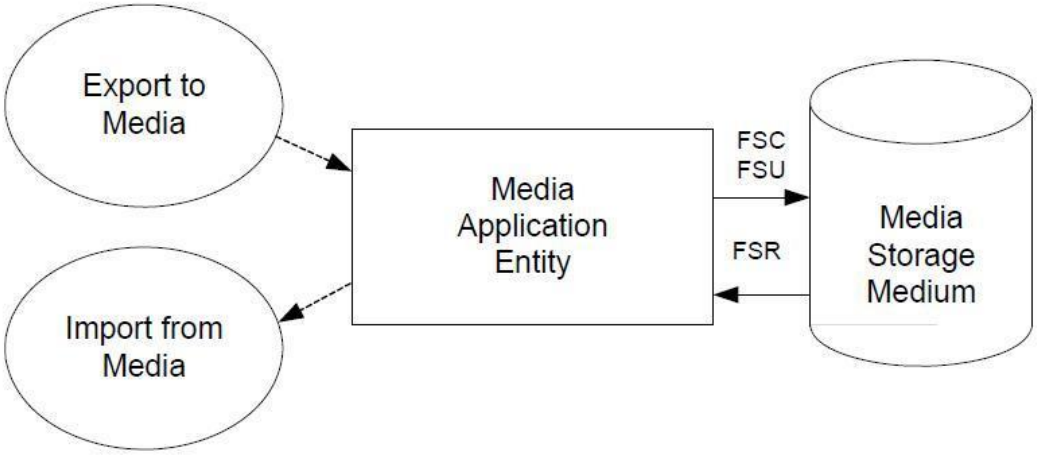

Figure9
Application Data Flow Diagram for Media Storage

The Media Application Entity exports Images and Structured Reports to a removable storage medium. It is associated with the local real-world activity “Backup” using the configured export selection parameters for selected patients’ data (images and / or Structured Reports).

5.1.2 Functional Definition of AE’s

5.1.2.1 Functional Definition of Media Application Entity

Using”Export” will pass the currently selected patients’ exams or individually selected images to the Media Application Entity. The contents of each export job will be written to the selected media destination. The size of the selected media is used to determine and display the number of media required for the export. When a device is filled to capacity, the system will prompt the user for addition media and continue.

5.1.3 Sequencing of Real-World Activities

At least one image must exist and be selected before the Media Application Entity can be invoked. The operator can insert new media at any time. The Media Application Entity will wait indefinitely for media to be inserted before starting to write to the device.

5.1.4 File Meta Information Options

The implementation information written to the File Meta Header in each file is:

Table88
DICOM Implementation Class and Version for Media Storage

Implementation Class UID	1.2.156.112536.1.2123.0.1.0.1

Implementation Version Name	SIEMENS_V1.0

5.2 AE Specifications

5.2.1 Media Application Entity Specification

The Media Application Entity provides standard conformance to the Media Storage Service Class. The Application Profiles and roles are listed below: The available physical media is CD-R, CD-RW, DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM, and USB devices.

Table89
Application Profiles, Activities and Roles

Application Profiles Supported	Real World Activity	Role
STD-GEN-USB-JPEG	Export Exam	FSC/FSU[1]
STD-US-SC-SF&MF-CDR	Read Exam	FSR
STD-US-SC-SF&MF-DVD	Import Exam	FSR
STD-US-SC-SF&MF-DVD-RAM		

Note: 1 functionality requires DVD+RW, DVD-RW, or USB

5.2.1.1 File Meta Information for the Application Entity

The File Meta Header does not include the Source Application Entity Title.

5.2.1.2 Real-World Activities

Activity-FSC-Export exams

When system user exports exams, images, SR, or Encapsulated PDF to a media upon which no DICOM data resides, it creates a DICOM file set and writes this DICOM File Set to this media.
The Media Application Entity acts as an FSC using the interchange option when requested to export SOP Instances from the local database to media upon which no DICOM data resides.

Activity-FSR-Import exams

When system user presents the directory of the media, presses “Restore” button and the selected exams are transferred from the media to the system for review. Objects transferred to the system retain their original SOP Instance UIDs.
The Media Application Entity acts as an FSR using the interchange option when requested to import SOP Instances from media to the local database.

Activity-FSU-Export exams

The system user selects exams from the system’s directory for transfer to media that already contains data. The DICOMDIR is updated allowing access to original and new data.
The Media Application Entity acts as an FSU using the interchange option when requested to export SOP Instances from the local database to media upon which DICOM data already resides.

Media Storage Application Profiles

See Table89 for supported Application Profiles.

Options

The Media Application Entity supports the SOP Classes and Transfer Syntaxes listed in the Table below:

Table90
IODs, SOP Classes and Transfer Syntaxes

Information Object Definition	SOP Class UID	Transfer Syntax	Transfer Syntax UID
DICOM Media Storage Directory	1.2.840.10008.1.3.10	Explicit VR Little Endian	1.2.840.10008.1.2.1
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Explicit VR Little Endian	1.2.840.10008.1.2.1
		JPEG Lossy, Baseline Sequential with Huffman Coding (Process 1)	1.2.840.10008.1.2.4.50
		JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1])	1.2.840.10008.1.2.4.70
		RLE Lossless	1.2.840.10008.1.2.5
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Explicit VR Little Endian	1.2.840.10008.1.2.1
		JPEG Lossy, Baseline Sequential with Huffman Coding (Process 1)	1.2.840.10008.1.2.4.50
		JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1])	1.2.840.10008.1.2.4.70
		RLE Lossless	1.2.840.10008.1.2.5
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90

Information Object Definition	SOP Class UID	Transfer Syntax	Transfer Syntax UID
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Explicit VR Little Endian	1.2.840.10008.1.2.1
		JPEG Lossy, Baseline Sequential with Huffman Coding (Process 1)	1.2.840.10008.1.2.4.50
		JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1])	1.2.840.10008.1.2.4.70
		RLE Lossless	1.2.840.10008.1.2.5
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91
Comprehensive SR Storage	1.2.840.10008.5.1.4.1.1.88.33	Explicit VR Little Endian	1.2.840.10008.1.2.1
Encapsulated PDF Storage	1.2.840.10008.5.1.4.1.1.104.1	Explicit VR Little Endian	1.2.840.10008.1.2.1
Enhanced US Volume Storage	1.2.840.10008.5.1.4.1.1.6.2	Explicit VR Little Endian	1.2.840.10008.1.2.1
Raw Data Storage	1.2.840.10008.5.1.4.1.1.66	Explicit VR Little Endian	1.2.840.10008.1.2.1

5.3 Media Storage Application Profile

See Table89 for supported Application Profiles.

5.3.1 DICOMDIR Attributes

The DICOMDIR file will contain the following attributes.

Table 91
Common Directory Information Module Attributes

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0004,1130)	CS	2	File-set ID	AUTO
(0004,1200)	UL	1	Offset of the First Directory Record of the Root Directory Entity	AUTO
(0004,1202)	UL	1	Offset of the Last Directory Record of the Root Directory Entity	AUTO
(0004,1212)	US	1	File-set Consistency Flag	0xFFFF
(0004,1220)	SQ	2	Directory Record Sequence	
>(0004,1400)	UL	1	Offset of the Next Directory Record	AUTO
>(0004,1410)	US	1	Record In-use Flag	0xFFFF
>(0004,1420)	UL	1	Offset of Referenced Lower-Level Directory Entity	AUTO
>(0004,1142)	CS	2	Specific Character Set of File-set Descriptor File	ISO_IR 100

Table 92
Patient Directory Record

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0004,1430)	CS	1	Directory Record Type	PATIENT
(0010,0020)	LO	1	Patient ID	MWL/USER
(0010,0010)	PN	2	Patient's Name	MWL/USER
(0010,0030)	DA	3	Patient's Birth Date	MWL/USER
(0010,0040)	CS	3	Patient's Sex	MWL/USER
(0010,1000)	LO	3	Other Patient IDs	MWL/USER

Table 93
Study Directory Record

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0004,1430)	CS	1	Directory Record Type	STUDY
(0008,0020)	DA	1	Study Date	AUTO
(0008,0030)	TM	1	Study Time	AUTO
(0020,0010)	SH	1	Study ID	AUTO
(0020,000D)	UI	1C	Study Instance UID	AUTO

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0008,0050)	SH	2	Accession Number	MWL/USER
(0008,1030)	LO	2	Study Description	If it is a scheduled exam, the value is mapped from Scheduled Procedure Step Description; If not, USER
(0008,0090)	PN		Referring Physician's Name	MWL/USER

Table 94
Series Directory Record

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0004,1430)	CS	1	Directory Record Type	SERIES
(0008,0060)	CS	1	Modality	US
(0020,000E)	UI	1	Series Instance UID	AUTO
(0020,0011)	IS	1	Series Number	AUTO
(0008,0021)	DA	3	Series Date	AUTO
(0008,0031)	TM	3	Series Time	AUTO
(0008,103e)	LO		Series Description	If it is a scheduled exam, the value is mapped from Scheduled Procedure Step Description; If not, same as the value of Study Description
(0008,1050)	PN		Performing Physician's Name	MWL/USER

Table 95
Image Directory Record

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0004,1430)	CS	1	Directory Record Type	IMAGE
(0004,1500)	CS	1C	Referenced File ID	AUTO
(0004,1510)	UI	1C	Referenced SOP Class UID in File	AUTO
(0004,1511)	UI	1C	Referenced SOP Instance UID in File	AUTO
(0004,1512)	UI	1C	Referenced Transfer Syntax UID in File	AUTO
(0020,0013)	IS	1	Instance Number	AUTO

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0028,0008)	IS	3	Number of Frames	AUTO(Only used for mutil-frame image)

5.4 Augmented and Private Application Profiles

No augmented/private profile is supported.

5.5 Media Configuration

None.

6 SUPPORT OF CHARACTER SETS

6.1 Character Sets for ACUSON Bonsai™ System

In addition to the default character repertoire, the Defined Terms for Specific Character Set in Table96 are supported:

Table96
Supported Specific Character Set Defined Terms

Character Set Description	Defined Term	System Language
ISO 8859-1	ISO_IR 100	English, French, German, Italian, Portuguese, Spanish, Finnish, Danish, Icelandic, Norwegian, Swedish
ISO 8859-5	ISO_IR 144	Russian
ISO-8859-2	ISO_IR 101	Polish, Czech, Serbian
Chinese	GB18030	Chinese

If the system language is configured for one of above languages, the corresponding Character Set will be used automatically. Whether or not characters are displayed correctly depends on the operating system. For example, if the system is configured for Polish, the characters of Polish could display correctly.

7 SECURITY

7.1 Security Profiles

None supported.

7.2 Association Level Security

None supported.
Any Calling AE Titles and/or IP addresses may open an Association.

7.3 Application Level Security

None supported.

8 ANNEXES

8.1 IOD Contents

8.1.1 Created SOP Instances

None.

8.1.2 Usage of attributes from received IOD's

No SOP Class specific fields are required.
The local database makes use of the conventional identification attributes to distinguish patients, studies, series and instances. In particular, if two patients have the same value for Patient ID, Patient's Name and Patient's Sex, they will be treated as the same in the browser and the local database.

8.1.3 Attribute Mapping

Not applicable.

8.1.4 Coerced/Modified fields

No coercion is performed.

8.2 Data Dictionary of private attributes

No private attributes are defined.

8.3 Coded terminology and templates

The value for Code Meaning will be displayed for all code sequences. No local lexicon is provided to look up alternative code meanings.

8.4 Grayscale Image Consistency

Modality does not support the Grayscale Standard Display Function.

8.5 Standard extended/specialized/private sop Classes

None.

8.6 Private Transfer Syntaxes

None.

9 APPENDICES

9.1 Cardiac Structured Reporting Template

This appendix lists the DICOM Structured Report (SR) mappings used in the Cardiac Structured Reports of ultrasound system SR files.

The mappings are organized in a manner similar to the DICOM SR Templates as described in PS 3.16 of the DICOM Standard. The Cardiac Report mappings follow the DICOM SR Template TID 5200: Cardiac Ultrasound Procedure Report, except where noted.

All private code values use the Coding Scheme Designator "MRUS".

TID (5200) Echocardiography Procedure Report

This template forms the top of a content tree that allows an ultrasound system to describe the results of an adult echocardiography imaging procedure.

	NL	Rel with Parent	VT	Concept Name	Used in Modality	Condition	Value Set Constraint
1			CONTAINER	EV (125200, DCM, “Adult Echocardiography Procedure Report”)	√		
2	>	HAS CONCEPT MOD	INCLUDE	DTID (1204) Language of Content Item and Descendants			
3	>	HAS OBS CONTEXT	INCLUDE	DTID (1001) Observation Context	√		
4	>	CONTAINS	INCLUDE	DTID (5201) Echocardiography Patient Characteristics	√		
5	>	CONTAINS	CONTAINER	(111028, DCM, “Image Library”)			
6	>>	CONTAINS	IMAGE	No purpose of reference			
7	>	CONTAINS	INCLUDE	DTID(SELFTEM-2)Echo Procedure Summary Section	√		
8	>	CONTAINS	INCLUDE	DTID (5202) Echo Section	√		$SectionSubject = EV (T-32600, SRT, “Left Ventricle”) $MeasType = DCID (12200) Echocardiography Left Ventricle
9	>	CONTAINS	INCLUDE	DTID (5202) Echo Section	√		$SectionSubject = EV (T-32500, SRT, “Right Ventricle”) $MeasType = DCID

	NL	Rel with Parent	VT	Concept Name	Used in Modality	Condition	Value Set Constraint
							(12204) Echocardiography Right Ventricle
10	>	CONTAINS	INCLUDE	DTID (5202) Echo Section	√		$SectionSubject = EV (T-32300, SRT, “Left Atrium”) $MeasType = DCID (12205) Echocardiography Left Atrium
11	>	CONTAINS	INCLUDE	DTID (5202) Echo Section	√		$SectionSubject = EV (T-32200, SRT, “Right Atrium”) $MeasType = DCID (12206) Echocardiography Right Atrium
12	>	CONTAINS	INCLUDE	DTID (5202) Echo Section	√		$SectionSubject = EV (T-35400, SRT, “Aortic Valve”) $MeasType = DCID (12211) Echocardiography Aortic Valve
13	>	CONTAINS	INCLUDE	DTID (5202) Echo Section	√		$SectionSubject = EV (T-35300, SRT, “Mitral Valve”) $MeasType = DCID (12207) Echocardiography Mitral Valve
14	>	CONTAINS	INCLUDE	DTID (5202) Echo Section	√		$SectionSubject = EV (T-35200, SRT, “Pulmonic Valve”) $MeasType = DCID (12209) Echocardiography Pulmonic Valve
15	>	CONTAINS	INCLUDE	DTID (5202) Echo Section	√		$SectionSubject = EV (T-35100, SRT, “Tricuspid Valve”) $MeasType = DCID (12208) Echocardiography Tricuspid Valve
16	>	CONTAINS	INCLUDE	DTID (5202) Echo Section	√		$SectionSubject = EV (T-42000, SRT, “Aorta”) $MeasType= DCID (12212) Echocardiography Aorta
17	>	CONTAINS	INCLUDE	DTID (5202) Echo Section	√		$SectionSubject = EV (T-44000, SRT, “Pulmonary artery”) $MeasType DCID (12210) = Echocardiography Pulmonary Artery
18	>	CONTAINS	INCLUDE	DTID (5202) Echo Section	√		$SectionSubject = EV (T-48600, SRT, “Vena Cava”) $MeasType = DCID

	NL	Rel with Parent	VT	Concept Name	Used in Modality	Condition	Value Set Constraint
							(12215) Echocardiography Vena Cavae
19	>	CONTAINS	INCLUDE	DTID (5202) Echo Section	√		$SectionSubject = EV (T-48581, SRT, “Pulmonary Venous Structure”) $MeasType = DCID (12214) Echocardiography Pulmonary Veins
20	>	CONTAINS	INCLUDE	DTID (5202) Echo Section	√		$SectionSubject = EV (P5-30031, SRT, “Cardiac Shunt Study”) $MeasType = DCID (12217) Echocardiography Cardiac Shunt
21	>	CONTAINS	INCLUDE	DTID (5202) Echo Section	√		$SectionSubject = EV (D4-30000, SRT, “Congenital Anomaly of Cardiovascular System”) $MeasType = DCID (12218) Echocardiography Congenital
22	>	CONTAINS	INCLUDE	DTID (5204) Wall Motion Analysis			
23	>	CONTAINS	INCLUDE	DTID (5202) Echo Section	√		$SectionSubject = EV (D3-90000, SRT, “Pericardial disease") $MeasType = DCID (90000) Pericardial disease
24	>	CONTAINS	INCLUDE	DTID (5202) Echo Section	√		$SectionSubject = EV (T-48720, SRT, “Hepatic Vein") $MeasType = DCID (12216) Echocardiography Hepatic Veins
25	>	CONTAINS	INCLUDE	DTID (5202) Echo Section	√		$SectionSubject = EV (8867-4, SRT, “Hear rate”) $MeasType = DCID (12220) Echocardiography Common Measurements
26	>	CONTAINS	TEXT	(20121120,MRUS, “self-defined-Measurementfile”)	√		

TID(1001) Observation Context

This template specifies attributes of observation context that may be defined, extended or replaced at any location in the SR tree.

	NL	Rel with Parent	VT	Concept Name	Used in Modality	Condition	Value Set Constraint
1	>	HAS OBS CONTEXT	CODE	EV (121005,DCM, “Observer Type”)	√		(121006,DCM, “Person”)
2	>	HAS OBS CONTEXT	PNAME	EV (121008,DCM, “Person Observer Name”)	√		Operator from Info
3	>	HAS OBS CONTEXT	TEXT	EV (121009,DCM, “ Person Observer’s Organization Name”)	√		Institution Name (0008,0080) of the General Equipment Module
4	>	HAS OBS CONTEXT	CODE	EV (121010,DCM, “ Person Observer’s Role in the Organization”)	√		(121093, DCM, "Sonographer")
5	>	HAS OBS CONTEXT	CODE	EV (121024, DCM, "Subject Class”)	√		(121025, DCM, "Patient”)
6	>	HAS OBS CONTEXT	PNAME	EV (121029,DCM, "Subject Name”)	√		value of Patient’s Name (0010,0010) in Patient Module
7	>	HAS OBS CONTEXT	DATE	EV (121031,DCM, "Subject Birth Date”)	√		value of Patient’s Birth Date (0010,0030) in Patient Module
8	>	HAS OBS CONTEXT	CODE	EV (121032,DCM, "Subject Sex”)	√		value equivalent to Patient’s Sex (0010,0040) in Patient Module
9	>	HAS OBS CONTEXT	NUM	EV (121033,DCM, "Subject Age”)	√		value of Patient’s Age (0010,1010) in Patient Study Module

TID (5201) Echocardiography Patient Characteristics

	N L	Rel with Parent	VT	Concept Name	Used in Modality	Value Set Constraint	Comments
1			CONTAINER	EV (121118, DCM, “Patient Characteristics”)	√		
2	>	CONTAINS	NUM	EV (121033, DCM, "Subject Age”)	√	Units = DCID (7456) Units of Measure for Age	from Info
3	>	CONTAINS	CODE	EV (121032, DCM, "Subject Sex”)	√	DCID (7455) Sex	from worklist or Info
4	>	CONTAINS	NUM	EV (8867-4, LN, “Heart Rate”)	√		from Info
5	>	CONTAINS	NUM	EV (F-008EC, SRT, “Systolic Blood Pressure”)	√		from Info
6	>	CONTAINS	NUM	EV (F-008ED, SRT, "Diastolic Blood Pressure")	√		from Info
7	>	CONTAINS	NUM	EV(18070-3,LN,"Right Atrium Systolic Pressure")	√		from Info
8	>	CONTAINS	NUM	EV (8302-2, LN, “Patient Height”)	√		from worklist or Info

	N L	Rel with Parent	VT	Concept Name	Used in Modality	Value Set Constraint	Comments
9	>	CONTAINS	NUM	EV (29463-7, LN, “Patient Weight”)	√		from worklist or Info
10	>	CONTAINS	NUM	EV (8277-6, LN, “Body Surface Area”)	√		from Info
11	>>	INFERRED FROM	CODE	EV (8278-4, LN, "Body Surface Area Formula")	√	BCID (3663) Body Surface Area Equations	

TID (SELFTMP-2) Echo Procedure Summary Section

This is a private template referenced by TID(5200).

	NL	Rel with Parent	VT	Concept Name	Used in Modality	Value Set Constraint	Comment
1			CONTAINER	DT(12111,DCM,"Summary")	√		
2	>	CONTAINS	TEXT	EV(121106,DCM,"Comment")	√		from Info
3	>	CONTAINS	TEXT	(I12101-01,MRUS,"Primary Indications")	√		from Info
4	>	CONTAINS	TEXT	(I12101-02,MRUS,"Secondary Indications")	√		from Info
5	>	CONTAINS	TEXT	(I12101-03,MRUS,"CPT4 Code")	√		from Info
6	>	CONTAINS	TEXT	(I12101-04,MRUS,"CPT4 Description")	√		from Info
7	>	CONTAINS	TEXT	EV (121106, DCM, "Comment")	√		from report interface Comment
8	>	CONTAINS	TEXT	(I12101-05,MRUS,"Prompt")	√		from report interface Comment
9	>	CONTAINS	TEXT	(121071,DCM,"Findings")	√		from report interface Comment

TID (5202) Echo Section

	NL	Rel with Parent	VT	Concept Name	Used in Modality	Value Set Constraint	Comment
1			CONTAINER	EV (121070, DCM, ”Findings”)	√		
2	>	HAS CONCEPT MOD	CODE	EV (G-C0E3, SRT, “Finding Site”)	√	$SectionSubject = EV (T-32600, SRT, “Left Ventricle”)	
3	>	CONTAINS	CONTAINER	DT (125007, DCM, “Measurement Group”)	√		

	NL	Rel with Parent	VT	Concept Name	Used in Modality	Value Set Constraint	Comment
4	>>	HAS CONCEPT MOD	CODE	EV (G-0373, SRT,"Image Mode")		BCID (12224) Ultrasound Image Modes	
5	>>	HAS CONCEPT MOD	CODE	DT (125203,DCM,"Acquisition Protocol")			
6	>>	CONTAINS	INCLUDE	DTID (5203) Echo Measurement	√	$Measurement= $MeasType = DCID (12200) Echocardiography Left Ventricle $Method=CID (12227) Echocardiography Measurement Method	

TID (5203) Echo Measurement

	NL	Relation with Parent	Value Type	Concept Name	Used in Modality	Value Set Constraint	Comment
1			INCLUDE	DTID (300) Measurement	√	$Measurement = $Measurement $Method = $Method $TargetSite = BCID (12236) Echo Anatomic Sites $TargetSiteMod = BCID (12237) Echocardiography Anatomic Site Modifiers	
2	>	HAS CONCEPT MOD	CODE	EV(G-C036,SRT,"Measurement Method")	√	This row is used only if the measurement or calculation this template is invoked with mandates it. Otherwise this row is not used. The values are taken from the BCID 12227	
3	>	HAS CONCEPT MOD	CODE	EV (G-C048, SRT, "Flow Direction")	√	BCID (12221) Flow Direction	
4	>	HAS CONCEPT MOD	CODE	EV (R-40899, SRT, "Respiratory Cycle Point")		DCID (12234) Respiration State	
5	>	HAS CONCEPT MOD	CODE	EV (R-4089A, SRT, "Cardiac Cycle Point")	√	DCID (12233) Respiration State	
6	>	HAS ACQ CONTEXT	CODE	EV (G-0373, SRT, "Image Mode")	√	DCID (12224) Ultrasound Image Modes	
7	>	HAS ACQ CONTEXT	CODE	EV (111031, DCM, "Image View")	√	BCID (12226) Echocardiography Image View	

CID (12200) Echocardiography Left Ventricle

INCLUDE CID 12220 Echocardiography Common Measurements
INCLUDE CID 12201 Left Ventricle Linear

INCLUDE CID 12240 Left Ventricle Area
INCLUDE CID 12202 Left Ventricle Volume
INCLUDE CID 12222 Orifice Flow Properties
INCLUDE CID 12203 Left Ventricle Other
INCLUDE CID 12239 Cardiac Output Properties

CID (12201) Left Ventricle Linear

CSD	CV	Code Meaning
LN	29436-3	Left Ventricle Internal End Diastolic Dimension
LN	29438-9	Left Ventricle Internal Systolic Dimension
LN	18051-3	Left Ventricular Fractional Shortening
LN	18154-5	Interventricular Septum Diastolic Thickness
LN	18155-2	Interventricular Septum to Posterior Wall Thickness Ratio
LN	18054-7	Interventricular Septum % Thickening
LN	18158-6	Interventricular Septum Systolic Thickness
LN	18053-9	Left Ventricle Posterior Wall % Thickening
LN	18077-8	Left Ventricle diastolic major axis
LN	18076-0	Left Ventricle systolic major axis
LN	18156-0	Left Ventricle Posterior Wall Systolic Thickness
LN	18152-9	Left Ventricle Posterior Wall Diastolic Thickness
MRUS	M12201-01	Left ventricular Major
MRUS	M12201-02	Left ventricular Minor
MRUS	C12201-01	Mean Velocity of Circumferential Fiber Shortening
MRUS	M12201-03	A Distance
MRUS	M12201-04	B Distance
MRUS	M12201-05	Left ventricular internal diameter to BSA Ratio
MRUS	M12201-05	Left ventricular mean circumference Fractional Shortening

CID (12202) Left Ventricle Volume

CSD	CV	Code Meaning
LN	18026-5	Left Ventricular End Diastolic Volume
LN	18148-7	Left Ventricular End Systolic Volume
LN	18043-0	Left Ventricular Ejection Fraction
MRUS	C12202-01	Left Ventricular EDV index
MRUS	C12202-02	Left Ventricular ESV index

CID (12203) Left Ventricle Other

CSD	CV	Code Meaning
LN	18087-7	Left Ventricle Mass
LN	18071-1	Left Ventricular Isovolumic Relaxation Time
SRT	G-037E	Left Ventricular Isovolumic Contraction Time
SRT	G-037F	Left Ventricular Index of Myocardial Performance
MRUS	M12203-01	Left Ventricle Pre-Ejection Period
MRUS	M12203-02	Left Ventricle Ejection Time
MRUS	C12203-01	Left ventricular Mass Weight Index
MRUS	C12203-02	Left Ventricle Pre-Ejection Period to Ejection Time Ratio

CID (12204) Echocardiography Right Ventricle

CSD	CV	Code Meaning
INCLUDE CID 12220 Echocardiography Common Measurements		
INCLUDE CID 12222 Orifice Flow Properties		
INCLUDE CID 12239 Cardiac Output Properties		
LN	20304-2	Right Ventricular Internal Diastolic Dimension

CSD	CV	Code Meaning
LN	20305-9	Right Ventricular Internal Systolic Dimension
SRT	G-0381	Right Ventricular Index of Myocardial Performance
SRT	G-0380	Right Ventricular Peak Systolic Pressure
LN	18153-7	Right Ventricular Anterior Wall Diastolic Thickness
LN	18157-8	Right Ventricular Anterior Wall Systolic Thickness
MRUS	M12204-01	Right ventricular Major
MRUS	M12204-02	Right ventricular Minor
MRUS	M12204-03	Right ventricular Area at end-diastole
MRUS	M12204-04	Right ventricular Area at end-systole
MRUS	M12204-05	Right Ventricle Pre-Ejection Period
MRUS	M12204-06	Right Ventricle Ejection Time
MRUS	C12204-01	Right Ventricle Pre-Ejection Period to Ejection Time Ratio
MRUS	C12204-03	Right Ventricular Fractional Area Change

CID (12205) Echocardiography Left Atrium

CSD	CV	Code Meaning
INCLUDE CID 12220 Echocardiography Common Measurements		
LN	29469-4	Left Atrium Antero-posterior Systolic Dimension
LN	17985-3	Left Atrium to Aortic Root Ratio
LN	17977-0	Left Atrium Systolic Area
SRT	G-0383	Left Atrium Systolic Volume
MRUS	M12205-01	Left atrium Major
MRUS	M12205-02	Left atrium Minor
MRUS	C12205-01	Aortic Root to Left Atrium Ratio
MRUS	C12205-02	Left Atrium Volume index

CID (12206) Echocardiography Right Atrium

CSD	CV	Code Meaning
INCLUDE CID 12220 Echocardiography Common Measurements		
LN	17988-7	Right Atrium Systolic Area
MRUS	M12206-01	Right atrium Major
MRUS	M12206-02	Right atrium Minor
MRUS	M12206-03	Right atrium Volume
MRUS	M12206-04	Right atrium Volume index

CID (12207) Echocardiography Mitral Valve

CSD	CV	Code Meaning
SRT	F-32120	Stroke Volume
INCLUDE CID 12220 Echocardiography Common Measurements		
INCLUDE CID 12222 Orifice Flow Properties		
INCLUDE CID 12239 Cardiac Output Properties		
LN	17978-8	Mitral Valve A-Wave Peak Velocity
LN	18037-2	Mitral Valve E-Wave Peak Velocity
LN	18038-0	Mitral Valve E to A Ratio
SRT	G-0386	Mitral Valve AT/DT Ratio
LN	18040-6	Mitral Valve E-F Slope by M-Mode
LN	18036-4	Mitral Valve EPSS, E wave
SRT	G-0385	Mitral Valve A-Wave Duration
SRT	G-0387	Mitral Valve Closure to Opening Time
LN	18035-6	Mitral Regurgitation dP/dt derived from Mitral Reg. velocity
MRUS	M12207-01	Mitral valve cusp separate distance
MRUS	M12207-02	Mitral Valve D-E Slope
MRUS	M12207-03	Amplitude of the A wave
MRUS	M12207-04	Amplitude of the E wave
MRUS	M12207-05	Amplitude from D point to E point
MRUS	M12207-06	Mitral Valve E-wave Pressure Gradient

CSD	CV	Code Meaning
MRUS	M12207-07	Mitral Valve A-wave Pressure Gradient
MRUS	M12207-08	E wave Velocity Time Integral
MRUS	M12207-9	A wave Velocity Time Integral
MRUS	M12207-10	Mitral Valve E-Wave Duration
MRUS	M12207-11	Systolic Velocity of the Mitral Annulus(medial)
MRUS	M12207-12	Early diastolic velocity of the mitral annulus(medial)
MRUS	M12207-13	Late diastolic velocity of the mitral annulus(medial)
MRUS	M12207-14	Early diastolic velocity to Late diastolic velocity Ratio
MRUS	M12207-15	Acceleration Time of Early diastolic velocity
MRUS	M12207-16	Acceleration Rate of Early diastolic velocity
MRUS	M12207-17	Deceleration Time of Early diastolic velocity
MRUS	M12207-18	Deceleration Rate of Early diastolic velocity
MRUS	M12207-19	Systolic Velocity of the Mitral Annulus(lateral)
MRUS	M12207-20	Early diastolic velocity of the mitral annulus(lateral)
MRUS	M12207-21	Late diastolic velocity of the mitral annulus(lateral)
MRUS	M12207-22	Early diastolic velocity to Late diastolic velocity Ratio
MRUS	M12207-23	Acceleration Time of Early diastolic velocity
MRUS	M12207-24	Acceleration Rate of Early diastolic velocity
MRUS	M12207-25	Deceleration Time of Early diastolic velocity
MRUS	M12207-26	Deceleration Rate of Early diastolic velocity
MRUS	M12207-27	Mitral Stenosis Radius
MRUS	M12207-28	Mitral Stenosis Aliasing Velocity
MRUS	M12207-29	Mitral Stenosis Maximum Velocity
MRUS	M12207-30	Mitral Stenosis Area
MRUS	M12207-31	Mitral Stenosis Area
MRUS	M12207-32	Mitral Stenosis Maximum Pressure Gradient
MRUS	M12207-33	Mitral Valve A-C Slope
MRUS	M12207-34	A Wave Amplitude to C Wave Amplitude Ratio
MRUS	C12207-01	Mitral Stenosis Maximum Pressure Gradient
MRUS	M12207-35	MV E/Ea medial
MRUS	M12207-36	MV E/Ea lateral
MRUS	M12207-37	MV E/Ea medial lateral
MRUS	M12207-38	Mitral Valve A-C Interval
MRUS	M12207-39	Mitral Annular Plane Systolic Excursion

CID (12208) Echocardiography Tricuspid Valve

CSD	CV	Code Meaning
INCLUDE CID 12220 Echocardiography Common Measurements		
INCLUDE CID 12222 Orifice Flow Properties		
LN	18031-5	Tricuspid Valve E Wave Peak Velocity
LN	18030-7	Tricuspid Valve A Wave Peak Velocity
LN	18039-8	Tricuspid Valve E to A Ratio
LN	20296-0	Time from Q wave to Tricuspid Valve Opens
SRT	G-0389	Tricuspid Valve Closure to Opening Time
MRUS	M12208-01	Tricuspid Valve E-Wave Duration
MRUS	M12208-02	Tricuspid Valve E Wave Pressure Gradient
MRUS	M12208-03	Tricuspid Valve A Wave Pressure Gradient
MRUS	M12208-04	Tricuspid Annular Plane Systolic Excursion

CID (12209) Echocardiography Pulmonic Valve

INCLUDE CID 12220 Echocardiography Common Measurements
INCLUDE CID 12222 Orifice Flow Properties

CID (12210) Echocardiography Pulmonary Artery

CSD	CV	Code Meaning
INCLUDE CID 12220 Echocardiography Common Measurements		

CSD	CV	Code Meaning
LN	18020-8	Main Pulmonary Artery Diameter
LN	18021-6	Right Pulmonary Artery Diameter
LN	18019-0	Left Pulmonary Artery Diameter
SRT	G-038A	Main Pulmonary Artery Peak Velocity
MRUS	M12210-01	Posterior ductal Diameter
MRUS	C12210-01	Pulmonary Artery End Diastolic Pressure

CID (12211) Echocardiography Aortic Valve

CSD	CV	Code Meaning
INCLUDE CID 12220 Echocardiography Common Measurements		
INCLUDE CID 12222 Orifice Flow Properties		
LN	17996-0	Aortic Valve Cusp Separation
SRT	G-0382	Ratio of Aortic Valve Acceleration Time to Ejection Time

CID (12212) Echocardiography Aorta

CSD	CV	Code Meaning
INCLUDE CID 12220 Echocardiography Common Measurements		
LN	18015-8	Aortic Root Diameter
LN	18011-7	Aortic Arch Diameter
LN	18012-5	Ascending Aortic Diameter
LN	18014-1	Aortic Isthmus Diameter
LN	18013-3	Descending Aortic Diameter
MRUS	M12212-01	Aortic Sinotubular junction Diameter
MRUS	M12212-02	Aortic Sinus Diameter
MRUS	M12212-03	Ductus Artery Diameter
MRUS	M12212-04	Previous Ductal Diameter
MRUS	M12212-05	Left Coronary Artery Diameter
MRUS	M12212-06	Right Coronary Artery Diameter
MRUS	C12212-02	Aortic Sinotubular junction Diameter/Aorta Root Diameter

CID (12214) Echocardiography Pulmonary Veins

CSD	CV	Code Meaning
INCLUDE CID 12220 Echocardiography Common Measurements		
SRT	G-038B	Pulmonary Vein A-Wave Duration
SRT	G-038D	Pulmonary Vein D-Wave Velocity Time Integral/
SRT	G-038C	Pulmonary Vein S-Wave Velocity Time Integral
MRUS	M12214-01	Pulmonary Vein S wave flow Velocity
MRUS	M12214-02	Pulmonary Vein D-wave flow Velocity
MRUS	M12214-03	Pulmonary Vein A-wave flow Velocity
MRUS	M12214-04	Pulmonary Vein Deceleration Time
MRUS	M12214-05	Pulmonary Vein Ratio of S-Wave velocity to D-wave velocity
MRUS	M12214-06	Pulmonary Vein Systolic fraction

CID (12215) Echocardiography Vena Cavae

CSD	CV	Code Meaning
INCLUDE CID 12220 Echocardiography Common Measurements		
LN	18006-7	Inferior Vena Cava Diameter
MRUS	M12215-01	Superior Vena Cava Diameter
MRUS	C12215-03	Collapsible index of inferior vena cava
MRUS	C12215-04	Distensibility index of inferior vena cava
MRUS	C12215-05	Collapsible index of superior vena cava
MRUS	C12215-06	Distensibility index of superior vena cava

CID (12216) Echocardiography Hepatic Veins

CSD	CV	Code Meaning
INCLUDE CID 12220 Echocardiography Common Measurements		
LN	29471-0	Hepatic Vein Systolic Peak Velocity
LN	29472-8	Hepatic Vein Diastolic Peak Velocity
LN	29473-6	Hepatic Vein Systolic to Diastolic Ratio
LN	29474-4	Hepatic Vein Atrial Contraction Reversal Peak Velocity
MRUS	29473-0	Hepatic Vein Systolic Pressure Gradient
MRUS	29473-1	Hepatic Vein Diastolic Pressure Gradient

CID (12217) Echocardiography Cardiac Shunt

CSD	CV	Code Meaning
INCLUDE CID 12220 Echocardiography Common Measurements		
INCLUDE CID 12239 Cardiac Output Properties		
LN	29462-9	Pulmonary-to-Systemic Shunt Flow Ratio
MRUS	M12217-01	Pulmonary-sub-Systemic Shunt Flow Difference

CID (12218) Echocardiography Congenital

CSD	CV	Code Meaning
INCLUDE CID 12220 Echocardiography Common Measurements		
INCLUDE CID 12222 Orifice Flow Properties		
MRUS	M12218-01	Patent Ductus Arteriosus Diameter
MRUS	M12218-02	Patent Foramen Ovale Diameter
MRUS	M12218-03	Patent Ductus Arteriosus Diastolic Velocity
MRUS	M12218-04	Patent Ductus Arteriosus Systolic Velocity
MRUS	M12218-05	Coarctation of Pre-Ductus Velocity
MRUS	M12218-06	Coarctation of Post-Ductus Velocity
MRUS	M12218-07	Patent Ductus Arteriosus Diastolic Peak Gradient
MRUS	M12218-08	Patent Ductus Arteriosus Systolic Peak Gradient
MRUS	M12218-09	Coarctation of Pre-Ductus Peak Gradient
MRUS	M12218-10	Coarctation of Post-Ductus Peak Gradient

CID (12220) Echocardiography Common Measurements

CSD	CV	Code Meaning
LN	8867-4	Heart rate

CID (12221) Flow Direction

CSD	CV	Code Meaning
SRT	R-42047	Antegrade Flow
SRT	R-42E61	Regurgitant Flow

CID (12222) Orifice Flow Properties

CSD	CV	Code Meaning
SRT	G-038E	Cardiovascular Orifice Area
SRT	G-038F	Cardiovascular Orifice Diameter
SRT	G-0390	Regurgitant Fraction
LN	11726-7	Peak Velocity
LN	20352-1	Mean Velocity

CSD	CV	Code Meaning
LN	20247-3	Peak Gradient
LN	20256-4	Mean Gradient
LN	20354-7	Velocity Time Integral
LN	20168-1	Acceleration Time
LN	11653-3	End Diastolic Velocity
LN	20280-4	Pressure Half-Time
LN	20217-6	Deceleration Time
LN	33878-0	Volume Flow
LN	34141-2	Peak Instantaneous Flow Rate
LN	20216-8	Deceleration Slope
MRUS	M12222-05	Aliasing Velocity
MRUS	M12222-04	Time
MRUS	M12222-02	Acceleration Slope
MRUS	M12222-06	Flow Radius
MRUS	M12222-01	Angle
MRUS	M12222-08	Presure Gradient at end-Diastole
MRUS	M12222-07	Acceleration Time/Deceleration Time

CID (12224) Ultrasound Image Modes

CSD	CV	Code Meaning
SRT	G-03A2	2D mode
SRT	G-0394	M mode
SRT	R-409E2	Doppler Color Flow
SRT	G-0394	M mode
SRT	R-409E4	Doppler Pulsed
SRT	R-409E3	Doppler Continuous Wave
DCM	125230	Power Doppler
DCM	125231	3D mode
MRUS	IM12224-01	Tissue Doppler Imaging

CID (12226) Echocardiography Image View

CSD	CV	Code Meaning
SRT	G-A19B	Apical two chamber
SRT	G-A19C	Apical four chamber
SRT	G-0395	Apical long axis
SRT	G-0396	Parasternal long axis
SRT	G-0397	Parasternal short axis
SRT	G-0398	Parasternal short axis at the aortic valve level
SRT	G-0399	Parasternal short axis at the level of the mitral chords
SRT	G-039A	Parasternal short axis at the Mitral Valve level
SRT	G-039B	Parasternal short axis at the Papillary Muscle level
SRT	G-039C	Right Ventricular Inflow Tract View
SRT	G-039D	Right Ventricular Outflow Tract View
SRT	G-039E	Subcostal long axis
SRT	G-039F	Subcostal short axis
SRT	G-03A0	Suprasternal long axis
SRT	G-03A1	Suprasternal short axis

CID (12227) Echocardiography Measurement Method

INCLUDE CID 12228 Echocardiography Volume Methods
INCLUDE CID 12229 Echocardiography Area Methods
INCLUDE CID 12231 Volume Flow Methods
INCLUDE CID 12232 Myocardium Mass Methods

CID (12228) Volume Methods

CSD	CV	Code Meaning
DCM	125204	Area-Length Biplane
DCM	125205	Area-Length Single Plane
DCM	125211	Biplane Ellipse
DCM	125226	Single Plane Ellipse
DCM	125206	Cube Method
DCM	125207	Method of Disks, Biplane
DCM	125208	Method of Disks, Single Plane
DCM	125209	Teichholz
MRUS	VM12228-01	Bullet
MRUS	VM12228-02	Method of Disks,Simpson
MRUS	VM12228-03	Gibson

CID (12229) Area Methods

CSD	CV	Code Meaning
DCM	125210	Area by Pressure Half-Time
DCM	125212	Continuity Equation
DCM	125213	Continuity Equation by Mean Velocity
DCM	125214	Continuity Equation by Peak Velocity
DCM	125215	Continuity Equation by Velocity Time Integral
DCM	125216	Proximal Isovelocity Surface Area
DCM	125220	Planimetry

CID (12230) Gradient Methods

CSD	CV	Code Meaning
DCM	125217	Full Bernoulli
DCM	125218	Simplified Bernoulli

CID (12231) Volume Flow Methods

CSD	CV	Code Meaning
DCM	125219	Doppler Volume Flow
DCM	125216	Proximal Isovelocity Surface Area

CID (12232) Myocardium Mass Methods

CSD	CV	Code Meaning
DCM	125221	Left Ventricle Mass by M-mode
DCM	125222	Left Ventricle Mass by Truncated Ellipse

CID (12233) Cardiac Phase

CSD	CV	Code Meaning
SRT	F-32020	Systole
SRT	F-32010	Diastole
SRT	F-32011	End Diastole
DCM	109070	End Systole

CID (12234) Respiration Phase

CSD	CV	Code Meaning
SRT	F-20010	During Inspiration
SRT	F-20020	During Expiration

CID (12239) Cardiac Output Properties

CSD	CV	Code Meaning
SRT	F-32120	Stroke Volume
SRT	F-32100	Cardiac Output
SRT	F-32110	Cardiac Index
SRT	F-00078	Stroke Index
SRT	F-04FD8	RV Stroke Volume
SRT	F-04FE5	RV Stroke Index
SRT	F-04FA5	RV Cardiac Output
SRT	F-04F84	RV Cardiac Index

CID (12240) Left Ventricle Area

CSD	CV	Code Meaning
SRT	G-0374	Left Ventricular Systolic Area
SRT	G-0375	Left Ventricular Diastolic Area
SRT	G-0379	Left Ventricle Epicardial Diastolic Area, psax pap view
MRUS	M12240-01	Left Ventricle Endocardiac Diastolic Area, psax pap view
STR	G-0376	Left Ventricular Fractional Area Change

CID (90000) Pericardial disease

CSD	CV	Code Meaning
MRUS	C90000-01	Pericard Effusion at end-diastole
MRUS	C90000-02	Pericard Effusion at end-systole

Mapping between Modality measurements and DICOM Concepts

Left Ventricle Measurements

MODALITY Label	*DICOM Mapping*	*Optional Modifiers*
LVOT HR	8867-4,LN,Heart rate	
LVIDd(2D)	29436-3,LN,Left Ventricle Internal End Diastolic Dimension	ImageMode = G-03A2,SRT,2D mode;
LVIDd Cube(2D)	29436-3,LN,Left Ventricle Internal End Diastolic Dimension	ImageMode = G-03A2,SRT,2D mode; Method =125206,DCM,Cube Method
LVIDd Teich(2D)	29436-3,LN,Left Ventricle Internal End Diastolic Dimension	ImageMode = G-03A2,SRT,2D mode; Method =125209,DCM,Teichholz
LVIDd Gibson(2D)	29436-3,LN,Left Ventricle Internal End Diastolic Dimension	ImageMode = G-03A2,SRT,2D mode; Method =VM12228-03,MRUS,Gibson
LVIDd Gibson(M)	29436-3,LN,Left Ventricle Internal End Diastolic Dimension	ImageMode = G-0394,SRT,M Mode; Method =VM12228-03,MRUS,Gibson
LVIDd Cube(M)	29436-3,LN,Left Ventricle Internal End Diastolic Dimension	ImageMode = G-0394,SRT,M Mode; Method =125206,DCM,Cube Method
LVIDd Teich(M)	29436-3,LN,Left Ventricle Internal End Diastolic Dimension	ImageMode = G-0394,SRT,M Mode; Method =125209,DCM,Teichholz
LVIDd LV Mass(Cube)(2D)	29436-3,LN,Left Ventricle Internal End Diastolic Dimension	ImageMode = G-03A2,SRT,2D mode;
LVIDd LV Mass(Cube)(M)	29436-3,LN,Left Ventricle Internal End Diastolic Dimension	ImageMode = G-0394,SRT,M Mode; Method =125221,DCM,Left Ventricle Mass by M-mode
LVIDd(BP Ellipse)	29436-3,LN,Left Ventricle Internal End Diastolic Dimension	ImageMode = G-03A2,SRT,2D mode; Method =125211,DCM,Biplane Ellipse
LVIDd(M)	29436-3,LN,Left Ventricle Internal End Diastolic Dimension	ImageMode = G-0394,SRT,M Mode;
LVIDs(2D)	29438-9,LN,Left Ventricle Internal Systolic Dimension	ImageMode = G-03A2,SRT,2D mode;
LVIDs Cube(2D)	29438-9,LN,Left Ventricle Internal Systolic Dimension	ImageMode = G-03A2,SRT,2D mode; Method =125206,DCM,Cube Method
LVIDs Teich(2D)	29438-9,LN,Left Ventricle Internal Systolic Dimension	ImageMode = G-03A2,SRT,2D mode; Method =125209,DCM,Teichholz

MODALITY Label	*DICOM Mapping*	*Optional Modifiers*
LVIDs Gibson(2D)	29438-9,LN,Left Ventricle Internal Systolic Dimension	ImageMode = G-03A2,SRT,2D mode; Method =VM12228-03,MRUS,Gibson
LVIDs Cube(M)	29438-9,LN,Left Ventricle Internal Systolic Dimension	ImageMode = G-0394,SRT,M Mode; Method =125206,DCM,Cube Method
LVIDs Teich(M)	29438-9,LN,Left Ventricle Internal Systolic Dimension	ImageMode = G-0394,SRT,M Mode; Method =125209,DCM,Teichholz
LVIDs Gibson(M)	29438-9,LN,Left Ventricle Internal Systolic Dimension	ImageMode = G-0394,SRT,M Mode; Method =VM12228-03,MRUS,Gibson
LVIDs(BP Ellipse)	29438-9,LN,Left Ventricle Internal Systolic Dimension	ImageMode = G-03A2,SRT,2D mode; Method =125211,DCM,Biplane Ellipse
LVIDs(M)	29438-9,LN,Left Ventricle Internal Systolic Dimension	ImageMode = G-0394,SRT,M Mode;
FS(Cube-M)	18051-3,LN,Left Ventricular Fractional Shortening	ImageMode = G-0394,SRT,M Mode; Method =125206,DCM,Cube Method
FS(Teich-M)	18051-3,LN,Left Ventricular Fractional Shortening	ImageMode = G-0394,SRT,M Mode; Method =125209,DCM,Teichholz
FS(Gibson-M)	18051-3,LN,Left Ventricular Fractional Shortening	ImageMode = G-0394,SRT,M Mode; Method =VM12228-03,MRUS,Gibson
FS(Cube-2D)	18051-3,LN,Left Ventricular Fractional Shortening	ImageMode = G-03A2,SRT,2D mode; Method =125206,DCM,Cube Method
FS(Teich-2D)	18051-3,LN,Left Ventricular Fractional Shortening	ImageMode = G-03A2,SRT,2D mode; Method =125209,DCM,Teichholz
FS(Gibson-2D)	18051-3,LN,Left Ventricular Fractional Shortening	ImageMode = G-03A2,SRT,2D mode; Method =VM12228-03,MRUS,Gibson
IVSd(2D)	18154-5,LN,Interventricular Septum Diastolic Thickness	ImageMode = G-03A2,SRT,2D mode;
IVSd(LV Mass Cube-2D)	18154-5,LN,Interventricular Septum Diastolic Thickness	ImageMode = G-03A2,SRT,2D mode;
IVSd(LV Mass Cube-M)	18154-5,LN,Interventricular Septum Diastolic Thickness	ImageMode = G-0394,SRT,M Mode; Method =125221,DCM,Left Ventricle Mass by M-mode
IVSd(M)	18154-5,LN,Interventricular Septum Diastolic Thickness	ImageMode = G-0394,SRT,M Mode; Method =
IVSd Teich(2D)	18154-5,LN,Interventricular Septum Diastolic Thickness	ImageMode = G-03A2,SRT,2D mode; Method =125209,DCM,Teichholz
IVSd Teich(M)	18154-5,LN,Interventricular Septum Diastolic Thickness	ImageMode = G-0394,SRT,M Mode; Method =125209,DCM,Teichholz
IVSd Cube(2D)	18154-5,LN,Interventricular Septum Diastolic Thickness	ImageMode = G-03A2,SRT,2D mode; Method =125206,DCM,Cube Method
IVSd Cube(M)	18154-5,LN,Interventricular Septum Diastolic Thickness	ImageMode = G-0394,SRT,M Mode; Method =125206,DCM,Cube Method
IVSd Gibson(2D)	18154-5,LN,Interventricular Septum Diastolic Thickness	ImageMode = G-03A2,SRT,2D mode; Method =VM12228-03,MRUS,Gibson
IVSd Gibson(M)	18154-5,LN,Interventricular Septum Diastolic Thickness	ImageMode = G-0394,SRT,M Mode; Method =VM12228-03,MRUS,Gibson
IVSd/LVPWd(2D)	18155-2,LN,Interventricular Septum to Posterior Wall Thickness Ratio	CardiacCyclePoint =F-32011,SRT,End Diastole; ImageMode = G-03A2,SRT,2D mode;
IVSs/LVPWs(2D)	18155-2,LN,Interventricular Septum to Posterior Wall Thickness Ratio	CardiacCyclePoint =109070,SRT,End Systole; ImageMode = G-03A2,SRT,2D mode;
IVSd/LVPWd(M)	18155-2,LN,Interventricular Septum to Posterior Wall Thickness Ratio	CardiacCyclePoint =F-32011,SRT,End Diastole; ImageMode = G-0394,SRT,M Mode;
IVSs/LVPWs(M)	18155-2,LN,Interventricular Septum to Posterior Wall Thickness Ratio	CardiacCyclePoint =109070,SRT,End Systole; ImageMode = G-0394,SRT,M Mode;
IVS%(2D)	18054-7,LN,Interventricular Septum % Thickening	ImageMode = G-03A2,SRT,2D mode;
IVS%(M)	18054-7,LN,Interventricular Septum % Thickening	ImageMode = G-0394,SRT,M Mode;
IVSs(2D)	18158-6,LN,Interventricular Septum Systolic Thickness	ImageMode = G-03A2,SRT,2D mode;
IVSs(M)	18158-6,LN,Interventricular Septum Systolic Thickness	ImageMode = G-0394,SRT,M Mode;
IVSs Teich(2D)	18158-6,LN,Interventricular Septum Systolic Thickness	ImageMode = G-03A2,SRT,2D mode; Method =125209,DCM,Teichholz
IVSs Teich(M)	18158-6,LN,Interventricular Septum Systolic Thickness	ImageMode = G-0394,SRT,M Mode; Method =125209,DCM,Teichholz

MODALITY Label	*DICOM Mapping*	*Optional Modifiers*
IVSs Cube(2D)	18158-6,LN,Interventricular Septum Systolic Thickness	ImageMode = G-03A2,SRT,2D mode; Method =125206,DCM,Cube Method
IVSs Cube(M)	18158-6,LN,Interventricular Septum Systolic Thickness	ImageMode = G-0394,SRT,M Mode; Method =125206,DCM,Cube Method
IVSs Gibson(2D)	18158-6,LN,Interventricular Septum Systolic Thickness	ImageMode = G-03A2,SRT,2D mode; Method =VM12228-03,MRUS,Gibson
IVSs Gibson(M)	18158-6,LN,Interventricular Septum Systolic Thickness	ImageMode = G-0394,SRT,M Mode; Method =VM12228-03,MRUS,Gibson
LVPW%(2D)	18053-9,LN,Left Ventricle Posterior Wall % Thickening	ImageMode = G-03A2,SRT,2D mode;
LVPW%(M)	18053-9,LN,Left Ventricle Posterior Wall % Thickening	ImageMode = G-0394,SRT,M Mode;
LVLd apical(Mod.Simpson)	18077-8,LN,Left Ventricle diastolic major axis	ImageMode = G-03A2,SRT,2D mode; Method =VM12228-02,MRUS,Method of Disks,Simpson
LVLd(A2C)	18077-8,LN,Left Ventricle diastolic major axis	ImageMode = G-03A2,SRT,2D mode; ImageView = G-A19B,SRT,Apical two chamber; Method =125208,DCM,Method of Disks, Single Plane
LVLd(A4C)	18077-8,LN,Left Ventricle diastolic major axis	ImageMode = G-03A2,SRT,2D mode; ImageView = G-A19C,SRT,Apical four chamber; Method =125208,DCM,Method of Disks, Single Plane
LVLd apical(SP Ellipse)	18077-8,LN,Left Ventricle diastolic major axis	ImageMode = G-03A2,SRT,2D mode; Method =125226,DCM,Single Plane Ellipse
LVLd apical(Bullet)	18077-8,LN,Left Ventricle diastolic major axis	ImageMode = G-03A2,SRT,2D mode; Method =VM12228-01,MRUS,Bullet
LVLd apical(LV Mass A-L)	18077-8,LN,Left Ventricle diastolic major axis	ImageMode = G-03A2,SRT,2D mode; Method =125205,DCM,Area-Length Single Plane
LVLd2i	18077-8,LN,Left Ventricle diastolic major axis	ImageMode = G-03A2,SRT,2D mode; ImageView = G-A19B,SRT,Apical two chamber; Method =125207,DCM,Method of Disks, Biplane
LVLd4i	18077-8,LN,Left Ventricle diastolic major axis	ImageMode = G-03A2,SRT,2D mode; ImageView = G-A19C,SRT,Apical four chamber; Method =125207,DCM,Method of Disks, Biplane
LVLs apical(Mod.Simpson)	18076-0,LN,Left Ventricle systolic major axis	ImageMode = G-03A2,SRT,2D mode;
LVLs(A2C)	18076-0,LN,Left Ventricle systolic major axis	ImageMode = G-03A2,SRT,2D mode; ImageView = G-A19B,SRT,Apical two chamber; Method =125226,DCM,Single Plane Ellipse
LVLs(A4C)	18076-0,LN,Left Ventricle systolic major axis	ImageMode = G-03A2,SRT,2D mode; ImageView = G-A19C,SRT,Apical four chamber; Method =125226,DCM,Single Plane Ellipse
LVLs apical(SP Ellipse)	18076-0,LN,Left Ventricle systolic major axis	ImageMode = G-03A2,SRT,2D mode;
LVLs apical(Bullet)	18076-0,LN,Left Ventricle systolic major axis	ImageMode = G-03A2,SRT,2D mode;
LVLs2i	18076-0,LN,Left Ventricle systolic major axis	ImageMode = G-03A2,SRT,2D mode; ImageView = G-A19B,SRT,Apical two chamber; Method =125207,DCM,Method of Disks, Biplane
LVLs4i	18076-0,LN,Left Ventricle systolic major axis	ImageMode = G-03A2,SRT,2D mode; ImageView = G-A19C,SRT,Apical four chamber; Method =125207,DCM,Method of Disks, Biplane
LVPWs(2D)	18156-0,LN,Left Ventricle Posterior Wall Systolic Thickness	ImageMode = G-03A2,SRT,2D mode;
LVPWs(M)	18156-0,LN,Left Ventricle Posterior Wall Systolic Thickness	ImageMode = G-0394,SRT,M Mode;
LVPWs Cube(2D)	18156-0,LN,Left Ventricle Posterior Wall Systolic Thickness	ImageMode = G-03A2,SRT,2D mode; Method =125206,DCM,Cube Method
LVPWs Cube(M)	18156-0,LN,Left Ventricle Posterior Wall Systolic Thickness	ImageMode = G-0394,SRT,M Mode; Method =125206,DCM,Cube Method

MODALITY Label	*DICOM Mapping*	*Optional Modifiers*
LVPWs Teich(2D)	18156-0,LN,Left Ventricle Posterior Wall Systolic Thickness	ImageMode = G-03A2,SRT,2D mode; Method =125209,DCM,Teichholz
LVPWs Teich(M)	18156-0,LN,Left Ventricle Posterior Wall Systolic Thickness	ImageMode = G-0394,SRT,M Mode; Method =125209,DCM,Teichholz
LVPWs Gibson(2D)	18156-0,LN,Left Ventricle Posterior Wall Systolic Thickness	ImageMode = G-03A2,SRT,2D mode; Method =VM12228-03,MRUS,Gibson
LVPWs Gibson(M)	18156-0,LN,Left Ventricle Posterior Wall Systolic Thickness	ImageMode = G-0394,SRT,M Mode; Method =VM12228-03,MRUS,Gibson
LVPWd(2D)	18152-9,LN,Left Ventricle Posterior Wall Diastolic Thickness	ImageMode = G-03A2,SRT,2D mode;
LVPWd(LV Mass-2D)	18152-9,LN,Left Ventricle Posterior Wall Diastolic Thickness	ImageMode = G-03A2,SRT,2D mode;
LVPWd(LV Mass-M)	18152-9,LN,Left Ventricle Posterior Wall Diastolic Thickness	ImageMode = G-0394,SRT,M Mode; Method =125221,DCM,Left Ventricle Mass by M-mode
LVPWd(M)	18152-9,LN,Left Ventricle Posterior Wall Diastolic Thickness	ImageMode = G-0394,SRT,M Mode;
LVPWd Cube(2D)	18152-9,LN,Left Ventricle Posterior Wall Diastolic Thickness	ImageMode = G-03A2,SRT,2D mode; Method =125206,DCM,Cube Method
LVPWd Cube(M)	18152-9,LN,Left Ventricle Posterior Wall Diastolic Thickness	ImageMode = G-0394,SRT,M Mode; Method =125206,DCM,Cube Method
LVPWd Teich(2D)	18152-9,LN,Left Ventricle Posterior Wall Diastolic Thickness	ImageMode = G-03A2,SRT,2D mode; Method =125209,DCM,Teichholz
LVPWd Teich(M)	18152-9,LN,Left Ventricle Posterior Wall Diastolic Thickness	ImageMode = G-0394,SRT,M Mode; Method =125209,DCM,Teichholz
LVPWd Gibson(2D)	18152-9,LN,Left Ventricle Posterior Wall Diastolic Thickness	ImageMode = G-03A2,SRT,2D mode; Method =VM12228-03,MRUS,Gibson
LVPWd Gibson(M)	18152-9,LN,Left Ventricle Posterior Wall Diastolic Thickness	ImageMode = G-0394,SRT,M Mode; Method =VM12228-03,MRUS,Gibson
LV Major	M12201-01,MRUS,Left ventricular Major	ImageMode = G-03A2,SRT,2D mode;
LV Minor	M12201-02,MRUS,Left ventricular Minor	ImageMode = G-03A2,SRT,2D mode;
MVCF(Cube-M)	C12201-01,MRUS,Mean Velocity of Circumferential Fiber Shortening	ImageMode = G-0394,SRT,M Mode; Method =125206,DCM,Cube Method
MVCF(Teich-M)	C12201-01,MRUS,Mean Velocity of Circumferential Fiber Shortening	ImageMode = G-0394,SRT,M Mode; Method =125209,DCM,Teichholz
MVCF(Gibson-M)	C12201-01,MRUS,Mean Velocity of Circumferential Fiber Shortening	ImageMode = G-0394,SRT,M Mode; Method =VM12228-03,MRUS,Gibson
MVCF(Cube-2D)	C12201-01,MRUS,Mean Velocity of Circumferential Fiber Shortening	ImageMode = G-03A2,SRT,2D mode; Method =125206,DCM,Cube Method
MVCF(Teich-2D)	C12201-01,MRUS,Mean Velocity of Circumferential Fiber Shortening	ImageMode = G-03A2,SRT,2D mode; Method =125209,DCM,Teichholz
MVCF(Gibson-2D)	C12201-01,MRUS,Mean Velocity of Circumferential Fiber Shortening	ImageMode = G-03A2,SRT,2D mode; Method =VM12228-03,MRUS,Gibson
a	M12201-03,MRUS,A Distance	ImageMode = G-03A2,SRT,2D mode;
d	M12201-04,MRUS,B Distance	ImageMode = G-03A2,SRT,2D mode;
LVIDd Index(M)	M12201-05,MRUS,Left ventricular internal diameter to BSA Ratio	CardiacCyclePoint =F-32011,SRT,End Diastole; ImageMode = G-0394,SRT,M Mode;
LVIDs Index(M)	M12201-05,MRUS,Left ventricular internal diameter to BSA Ratio	CardiacCyclePoint =109070,SRT,End Systole; ImageMode = G-0394,SRT,M Mode;
LVIDd Index(2D)	M12201-05,MRUS,Left ventricular internal diameter to BSA Ratio	CardiacCyclePoint =F-32011,SRT,End Diastole; ImageMode = G-03A2,SRT,2D mode;
LVIDs Index(2D)	M12201-05,MRUS,Left ventricular internal diameter to BSA Ratio	CardiacCyclePoint =109070,SRT,End Systole; ImageMode = G-03A2,SRT,2D mode;
rd2i	M12222-06,MRUS,Flow Radius	CardiacCyclePoint =F-32011,SRT,End Diastole; ImageMode = G-03A2,SRT,2D mode; ImageView = G-A19B,SRT,Apical two chamber; Method =125207,DCM,Method of Disks, Biplane

MODALITY Label	*DICOM Mapping*	*Optional Modifiers*
rd4i	M12222-06,MRUS,Flow Radius	CardiacCyclePoint =F-32011,SRT,End Diastole; ImageMode = G-03A2,SRT,2D mode; ImageView = G-A19C,SRT,Apical four chamber; Method =125207,DCM,Method of Disks, Biplane
rs2i	M12222-06,MRUS,Flow Radius	CardiacCyclePoint =109070,SRT,End Systole; ImageMode = G-03A2,SRT,2D mode; ImageView = G-A19B,SRT,Apical two chamber; Method =125207,DCM,Method of Disks, Biplane
rs4i	M12222-06,MRUS,Flow Radius	CardiacCyclePoint =109070,SRT,End Systole; ImageMode = G-03A2,SRT,2D mode; ImageView = G-A19C,SRT,Apical four chamber; Method =125207,DCM,Method of Disks, Biplane
LV Area(s)	G-0374,SRT,Left Ventricular Systolic Area	ImageMode = G-03A2,SRT,2D mode;
LVAs apical(SP Ellipse)	G-0374,SRT,Left Ventricular Systolic Area	ImageMode = G-03A2,SRT,2D mode; ImageView = G-0395,SRT,Apical long axis;
LVAs sax MV(Mod.Simpson)	G-0374,SRT,Left Ventricular Systolic Area	ImageMode =G-03A2,SRT,2D mode; ImageView = G-039A,SRT,Parasternal short axis at the Mitral Valve level;
LVAs sax PM	G-0374,SRT,Left Ventricular Systolic Area	ImageMode =G-03A2,SRT,2D mode; ImageView = G-039B,SRT,Parasternal short axis at the Papillary Muscle level;
LVAs(A2C)	G-0374,SRT,Left Ventricular Systolic Area	ImageMode =G-03A2,SRT,2D mode; ImageView = G-A19B,SRT,Apical two chamber; Method =125208,DCM,Method of Disks, Single Plane
LVAs(A4C)	G-0374,SRT,Left Ventricular Systolic Area	ImageMode =G-03A2,SRT,2D mode; ImageView = G-A19C,SRT,Apical four chamber; Method =125208,DCM,Method of Disks, Single Plane
LVAs sax MV(BP Ellipse)	G-0374,SRT,Left Ventricular Systolic Area	ImageMode =G-03A2,SRT,2D mode; ImageView = G-039A,SRT,Parasternal short axis at the Mitral Valve level; Method =125211,DCM,Biplane Ellipse
LVAs sax MV(Bullet)	G-0374,SRT,Left Ventricular Systolic Area	ImageMode =G-03A2,SRT,2D mode; ImageView = G-039A,SRT,Parasternal short axis at the Mitral Valve level; Method =VM12228-01,MRUS,Bullet
LVAs apical(BP Ellipse)	G-0374,SRT,Left Ventricular Systolic Area	ImageMode =G-03A2,SRT,2D mode; Method =125211,DCM,Biplane Ellipse
LV Area(d)	G-0375,SRT,Left Ventricular Diastolic Area	ImageMode =G-03A2,SRT,2D mode;
FAC	G-0376,SRT,Left Ventricular Fractional Area Change	ImageMode=G-03A2,SRT,2D mode ; Method=VM12228-02,MRUS,Method of Disks,Simpson
LVAd apical(SP Ellipse)	G-0375,SRT,Left Ventricular Diastolic Area	ImageMode =G-03A2,SRT,2D mode; ImageView = G-0395,SRT,Apical long axis;
LVAd sax MV(Mod.Simpson)	G-0375,SRT,Left Ventricular Diastolic Area	ImageMode =G-03A2,SRT,2D mode; ImageView = G-039A,SRT,Parasternal short axis at the Mitral Valve level;
LVAd sax PM	G-0375,SRT,Left Ventricular Diastolic Area	ImageMode =G-03A2,SRT,2D mode; ImageView = G-039B,SRT,Parasternal short axis at the Papillary Muscle level;
LVAd(A2C)	G-0375,SRT,Left Ventricular Diastolic Area	ImageMode =G-03A2,SRT,2D mode; ImageView = G-A19B,SRT,Apical two chamber; Method =125208,DCM,Method of Disks, Single Plane
LVAd(A4C)	G-0375,SRT,Left Ventricular Diastolic Area	ImageMode =G-03A2,SRT,2D mode; ImageView = G-A19C,SRT,Apical four chamber; Method =125208,DCM,Method of Disks, Single Plane

MODALITY Label	*DICOM Mapping*	*Optional Modifiers*
LVAd sax MV(BP Ellipse)	G-0375,SRT,Left Ventricular Diastolic Area	ImageMode =G-03A2,SRT,2D mode; ImageView = G-039A,SRT,Parasternal short axis at the Mitral Valve level; Method =125211,DCM,Biplane Ellipse
LVAd sax MV(Bullet)	G-0375,SRT,Left Ventricular Diastolic Area	ImageMode =G-03A2,SRT,2D mode; ImageView = G-039A,SRT,Parasternal short axis at the Mitral Valve level; Method =VM12228-01,MRUS,Bullet
LVAd apical(BP Ellipse)	G-0375,SRT,Left Ventricular Diastolic Area	ImageMode =G-03A2,SRT,2D mode; ImageView = G-0395,SRT,Apical long axis; Method =125211,DCM,Biplane Ellipse
LVAd sax Epi(LV Mass T-E)	G-0379,SRT,Left Ventricle Epicardial Diastolic Area, psax pap view	ImageMode =G-03A2,SRT,2D mode; ImageView = G-039B,SRT,Parasternal short axis at the Papillary Muscle level; Method =125222,DCM,Left Ventricle Mass by Truncated Ellipse
LVAd sax Epi(LV Mass A-L)	G-0379,SRT,Left Ventricle Epicardial Diastolic Area, psax pap view	ImageMode =G-03A2,SRT,2D mode; ImageView = G-039B,SRT,Parasternal short axis at the Papillary Muscle level; Method =125205,DCM,Area-Length Single Plane
LVAd sax Endo(LV Mass T-E)	M12240-01,MRUS,Left Ventricle Endocardiac Diastolic Area, psax pap view	ImageMode =G-03A2,SRT,2D mode; ImageView = G-039B,SRT,Parasternal short axis at the Papillary Muscle level; Method =125222,DCM,Left Ventricle Mass by Truncated Ellipse
LVAd sax Endo(LV Mass A-L)	M12240-01,MRUS,Left Ventricle Endocardiac Diastolic Area, psax pap view	ImageMode =G-03A2,SRT,2D mode; ImageView = G-039B,SRT,Parasternal short axis at the Papillary Muscle level; Method =125205,DCM,Area-Length Single Plane
EDV(SP Ellipse)	18026-5,LN,Left Ventricular End Diastolic Volume	ImageMode =G-03A2,SRT,2D mode; Method =125226,DCM,Single Plane Ellipse
EDV(BP Ellipse)	18026-5,LN,Left Ventricular End Diastolic Volume	ImageMode =G-03A2,SRT,2D mode; Method =125211,DCM,Biplane Ellipse
EDV(Bullet)	18026-5,LN,Left Ventricular End Diastolic Volume	ImageMode =G-03A2,SRT,2D mode; Method =VM12228-01,MRUS,Bullet
EDV(Mod.Simpson)	18026-5,LN,Left Ventricular End Diastolic Volume	ImageMode =G-03A2,SRT,2D mode; Method =VM12228-02,MRUS,Method of Disks,Simpson
EDV(Simp SP-A2C)	18026-5,LN,Left Ventricular End Diastolic Volume	ImageMode =G-03A2,SRT,2D mode; ImageView = G-A19B,SRT,Apical two chamber; Method =125208,DCM,Method of Disks, Single Plane
EDV(Simpson BP)	18026-5,LN,Left Ventricular End Diastolic Volume	ImageMode =G-03A2,SRT,2D mode; Method =125207,DCM,Method of Disks, Biplane
EDV(Simp BP-A2C)	18026-5,LN,Left Ventricular End Diastolic Volume	ImageMode =G-03A2,SRT,2D mode; ImageView = G-A19B,SRT,Apical two chamber; Method =125207,DCM,Method of Disks, Biplane
EDV(Simp BP-A4C)	18026-5,LN,Left Ventricular End Diastolic Volume	ImageMode =G-03A2,SRT,2D mode; ImageView = G-A19C,SRT,Apical four chamber; Method =125207,DCM,Method of Disks, Biplane
EDV(Cube-M)	18026-5,LN,Left Ventricular End Diastolic Volume	ImageMode =G-0394,SRT,M Mode; Method =125206,DCM,Cube Method
EDV(Teich-M)	18026-5,LN,Left Ventricular End Diastolic Volume	ImageMode =G-0394,SRT,M Mode; Method =125209,DCM,Teichholz
EDV(Gibson-M)	18026-5,LN,Left Ventricular End Diastolic Volume	ImageMode =G-0394,SRT,M Mode; Method =VM12228-03,MRUS,Gibson
EDV(Cube-2D)	18026-5,LN,Left Ventricular End Diastolic Volume	ImageMode =G-03A2,SRT,2D mode; Method =125206,DCM,Cube Method

MODALITY Label	*DICOM Mapping*	*Optional Modifiers*
EDV(Teich-2D)	18026-5,LN,Left Ventricular End Diastolic Volume	ImageMode =G-03A2,SRT,2D mode; Method =125209,DCM,Teichholz
EDV(Gibson-2D)	18026-5,LN,Left Ventricular End Diastolic Volume	ImageMode =G-03A2,SRT,2D mode; Method =VM12228-03,MRUS,Gibson
EDV(Simp SP-A4C)	18026-5,LN,Left Ventricular End Diastolic Volume	ImageMode =G-03A2,SRT,2D mode; ImageView = G-A19C,SRT,Apical four chamber; Method =125208,DCM,Method of Disks, Single Plane
ESV(SP Ellipse)	18148-7,LN,Left Ventricular End Systolic Volume	ImageMode =G-03A2,SRT,2D mode; Method =125226,DCM,Single Plane Ellipse
ESV(BP Ellipse)	18148-7,LN,Left Ventricular End Systolic Volume	ImageMode =G-03A2,SRT,2D mode; Method =125211,DCM,Biplane Ellipse
ESV(Bullet)	18148-7,LN,Left Ventricular End Systolic Volume	ImageMode =G-03A2,SRT,2D mode; Method =VM12228-01,MRUS,Bullet
ESV(Mod.Simpson)	18148-7,LN,Left Ventricular End Systolic Volume	ImageMode =G-03A2,SRT,2D mode; Method =VM12228-02,MRUS,Method of Disks,Simpson
ESV(Simp SP-A2C)	18148-7,LN,Left Ventricular End Systolic Volume	ImageMode =G-03A2,SRT,2D mode; ImageView = G-A19B,SRT,Apical two chamber; Method =125208,DCM,Method of Disks, Single Plane
ESV(Simpson BP)	18148-7,LN,Left Ventricular End Systolic Volume	ImageMode =G-03A2,SRT,2D mode; Method =125207,DCM,Method of Disks, Biplane
ESV(Simp BP-A2C)	18148-7,LN,Left Ventricular End Systolic Volume	ImageMode =G-03A2,SRT,2D mode; ImageView = G-A19B,SRT,Apical two chamber; Method =125207,DCM,Method of Disks, Biplane
ESV(Simp BP-A4C)	18148-7,LN,Left Ventricular End Systolic Volume	ImageMode =G-03A2,SRT,2D mode; ImageView = G-A19C,SRT,Apical four chamber; Method =125207,DCM,Method of Disks, Biplane
ESV(Cube-M)	18148-7,LN,Left Ventricular End Systolic Volume	ImageMode =G-0394,SRT,M Mode; Method =125206,DCM,Cube Method
ESV(Teich-M)	18148-7,LN,Left Ventricular End Systolic Volume	ImageMode =G-0394,SRT,M Mode; Method =125209,DCM,Teichholz
ESV(Gibson-M)	18148-7,LN,Left Ventricular End Systolic Volume	ImageMode =G-0394,SRT,M Mode; Method =VM12228-03,MRUS,Gibson
ESV(Cube-2D)	18148-7,LN,Left Ventricular End Systolic Volume	ImageMode =G-03A2,SRT,2D mode; Method =125206,DCM,Cube Method
ESV(Teich-2D)	18148-7,LN,Left Ventricular End Systolic Volume	ImageMode =G-03A2,SRT,2D mode; Method =125209,DCM,Teichholz
ESV(Gibson-2D)	18148-7,LN,Left Ventricular End Systolic Volume	ImageMode =G-03A2,SRT,2D mode; Method =VM12228-03,MRUS,Gibson
ESV(Simp SP-A4C)	18148-7,LN,Left Ventricular End Systolic Volume	ImageMode =G-03A2,SRT,2D mode; ImageView = G-A19C,SRT,Apical four chamber; Method =125208,DCM,Method of Disks, Single Plane
EF(SP Ellipse)	18043-0,LN,Left Ventricular Ejection Fraction	ImageMode =G-03A2,SRT,2D mode; Method =125226,DCM,Single Plane Ellipse
EF(BP Ellipse)	18043-0,LN,Left Ventricular Ejection Fraction	ImageMode =G-03A2,SRT,2D mode; Method =125211,DCM,Biplane Ellipse
EF(Bullet)	18043-0,LN,Left Ventricular Ejection Fraction	ImageMode =G-03A2,SRT,2D mode; Method =VM12228-01,MRUS,Bullet
EF(Mod.Simpson)	18043-0,LN,Left Ventricular Ejection Fraction	ImageMode =G-03A2,SRT,2D mode; Method =VM12228-02,MRUS,Method of Disks,Simpson
EF(A2C)	18043-0,LN,Left Ventricular Ejection Fraction	ImageMode =G-03A2,SRT,2D mode; Method =125208,DCM,Method of Disks, Single Plane
EF(Simpson BP)	18043-0,LN,Left Ventricular Ejection Fraction	ImageMode =G-03A2,SRT,2D mode; Method =125207,DCM,Method of Disks, Biplane

MODALITY Label	*DICOM Mapping*	*Optional Modifiers*
EF2(Simpson BP)	18043-0,LN,Left Ventricular Ejection Fraction	ImageMode =G-03A2,SRT,2D mode; ImageView = G-A19B,SRT,Apical two chamber; Method =125207,DCM,Method of Disks, Biplane
EF4(Simpson BP)	18043-0,LN,Left Ventricular Ejection Fraction	ImageMode =G-03A2,SRT,2D mode; ImageView = G-A19C,SRT,Apical four chamber; Method =125207,DCM,Method of Disks, Biplane
EF(Cube-M)	18043-0,LN,Left Ventricular Ejection Fraction	ImageMode =G-0394,SRT,M Mode; Method =125206,DCM,Cube Method
EF(Teich-M)	18043-0,LN,Left Ventricular Ejection Fraction	ImageMode =G-0394,SRT,M Mode; Method =125209,DCM,Teichholz
EF(Gibson-M)	18043-0,LN,Left Ventricular Ejection Fraction	ImageMode =G-0394,SRT,M Mode; Method =VM12228-03,MRUS,Gibson
EF(Cube-2D)	18043-0,LN,Left Ventricular Ejection Fraction	ImageMode =G-03A2,SRT,2D mode; Method =125206,DCM,Cube Method
EF(Teich-2D)	18043-0,LN,Left Ventricular Ejection Fraction	ImageMode =G-03A2,SRT,2D mode; Method =125209,DCM,Teichholz
EF(Gibson-2D)	18043-0,LN,Left Ventricular Ejection Fraction	ImageMode =G-03A2,SRT,2D mode; Method =VM12228-03,MRUS,Gibson
EF(A4C)	18043-0,LN,Left Ventricular Ejection Fraction	ImageMode =G-03A2,SRT,2D mode; ImageView = G-A19C,SRT,Apical four chamber; Method =125208,DCM,Method of Disks, Single Plane
LVOT Area	G-038E,SRT,Cardiovascular Orifice Area	ImageMode =G-03A2,SRT,2D mode;
LVOT Diam(2D)	G-038F,SRT,Cardiovascular Orifice Diameter	ImageMode =G-03A2,SRT,2D mode;
LVOT Diam(M)	G-038F,SRT,Cardiovascular Orifice Diameter	ImageMode =G-0394,SRT,M Mode;
LVOT Diam(MVA VTI)	G-038F,SRT,Cardiovascular Orifice Diameter	ImageMode =G-03A2,SRT,2D mode;
LVOT Diam(AVA VTI)	G-038F,SRT,Cardiovascular Orifice Diameter	ImageMode =G-03A2,SRT,2D mode;
LVOT Diam(AVA Vmax)	G-038F,SRT,Cardiovascular Orifice Diameter	ImageMode =G-03A2,SRT,2D mode;
LVOT Vmax	11726-7,LN,Peak Velocity	
LVOT Vmax(LVOT VTI)	11726-7,LN,Peak Velocity	
LVOT Vmean	20352-1,LN,Mean Velocity	
LVOT PGmax	20247-3,LN,Peak Gradient	
LVOT PGmax(LVOT VTI)	20247-3,LN,Peak Gradient	
LVOT PGmean	20256-4,LN,Mean Gradient	
LVOT VTI	20354-7,LN,Velocity Time Integral	
LVOT VTI(MVA VTI)	20354-7,LN,Velocity Time Integral	
LVOT VTI(AVA VTI)	20354-7,LN,Velocity Time Integral	
LVOT AccT	20168-1,LN,Acceleration Time	
LVOT θ	M12222-01,MRUS, Angle	
LVOT Acc Slope	M12222-02,MRUS, Acceleration Slope	
LV Mass(Cube-M)	18087-7,LN,Left Ventricle Mass	ImageMode =G-0394,SRT,M Mode; Method =125221,DCM,Left Ventricle Mass by M-mode
LV Mass(T-E)	18087-7,LN,Left Ventricle Mass	ImageMode =G-03A2,SRT,2D mode; Method =125222,DCM,Left Ventricle Mass by Truncated Ellipse
LV Mass(A-L)	18087-7,LN,Left Ventricle Mass	ImageMode =G-03A2,SRT,2D mode; Method =125205,DCM,Area-Length Single Plane
LV Mass(Cube-2D)	18087-7,LN,Left Ventricle Mass	ImageMode =G-03A2,SRT,2D mode;
IVRT	18071-1,LN,Left Ventricular Isovolumic Relaxation Time	
IVCT	G-037E,SRT,Left Ventricular Isovolumic Contraction Time	
LVIMP(M)	G-037F,SRT,Left Ventricular Index of Myocardial Performance	ImageMode =G-0394,SRT,M Mode;
LVIMP(Doppler)	G-037F,SRT,Left Ventricular Index of Myocardial Performance	
LVPEP(M)	M12203-01,MRUS,Left Ventricle Pre-Ejection Period	ImageMode =G-0394,SRT,M Mode;
LVPEP(Doppler)	M12203-01,MRUS,Left Ventricle Pre-Ejection Period	

MODALITY Label	*DICOM Mapping*	*Optional Modifiers*
LVET(M)	M12203-02,MRUS,Left Ventricle Ejection Time	ImageMode =G-0394,SRT,M Mode;
LVET(Doppler)	M12203-02,MRUS,Left Ventricle Ejection Time	
LVET LVIMP(M)	M12203-02,MRUS,Left Ventricle Ejection Time	ImageMode =G-0394,SRT,M Mode;
LVET LVIMP(Doppler)	M12203-02,MRUS,Left Ventricle Ejection Time	
LV Mass-I(Cube-M)	C12203-01,MRUS,Left ventricular Mass Weight Index	ImageMode =G-0394,SRT,M Mode; Method =125221,DCM,Left Ventricle Mass by M-mode
LV Mass-I(T-E)	C12203-01,MRUS,Left ventricular Mass Weight Index	ImageMode =G-03A2,SRT,2D mode; Method =125222,DCM,Left Ventricle Mass by Truncated Ellipse
LV Mass-I(A-L)	C12203-01,MRUS,Left ventricular Mass Weight Index	ImageMode =G-03A2,SRT,2D mode; Method =125205,DCM,Area-Length Single Plane
LV Mass-I(Cube-2D)	C12203-01,MRUS,Left ventricular Mass Weight Index	ImageMode =G-03A2,SRT,2D mode;
LVPEP/ET(M)	C12203-02,MRUS,Left Ventricle Pre-Ejection Period to Ejection Time Ratio	ImageMode =G-0394,SRT,M Mode;
LVPEP/ET(Doppler)	C12203-02,MRUS,Left Ventricle Pre-Ejection Period to Ejection Time Ratio	
LVOT SV	F-32120,SRT,Stroke Volume	
SV(SP Ellipse)	F-32120,SRT,Stroke Volume	ImageMode =G-03A2,SRT,2D mode; Method =125226,DCM,Single Plane Ellipse
SV(BP Ellipse)	F-32120,SRT,Stroke Volume	ImageMode =G-03A2,SRT,2D mode; Method =125211,DCM,Biplane Ellipse
SV(Bullet)	F-32120,SRT,Stroke Volume	ImageMode =G-03A2,SRT,2D mode; Method =VM12228-01,MRUS,Bullet
SV(Mod.Simpson)	F-32120,SRT,Stroke Volume	ImageMode =G-03A2,SRT,2D mode; Method =VM12228-02,MRUS,Method of Disks,Simpson
SV(A2C)	F-32120,SRT,Stroke Volume	ImageMode = G-03A2,SRT,2D mode; Method =125208,DCM,Method of Disks, Single Plane
SV(Simpson BP)	F-32120,SRT,Stroke Volume	ImageMode = G-03A2,SRT,2D mode; Method =125207,DCM,Method of Disks, Biplane
SV2(Simpson BP)	F-32120,SRT,Stroke Volume	ImageMode = G-03A2,SRT,2D mode; ImageView = G-A19B,SRT,Apical two chamber; Method =125207,DCM,Method of Disks, Biplane
SV4(Simpson BP)	F-32120,SRT,Stroke Volume	ImageMode = G-03A2,SRT,2D mode; ImageView = G-A19C,SRT,Apical four chamber; Method =125207,DCM,Method of Disks, Biplane
SV(Cube-M)	F-32120,SRT,Stroke Volume	ImageMode = G-0394,SRT,M Mode; Method =125206,DCM,Cube Method
SV(Teich-M)	F-32120,SRT,Stroke Volume	ImageMode = G-0394,SRT,M Mode; Method =125209,DCM,Teichholz
SV(Gibson-M)	F-32120,SRT,Stroke Volume	ImageMode = G-0394,SRT,M Mode; Method =VM12228-03,MRUS,Gibson
SV(Cube-2D)	F-32120,SRT,Stroke Volume	ImageMode = G-03A2,SRT,2D mode; Method =125206,DCM,Cube Method
SV(Teich-2D)	F-32120,SRT,Stroke Volume	ImageMode = G-03A2,SRT,2D mode; Method =125209,DCM,Teichholz
SV(Gibson-2D)	F-32120,SRT,Stroke Volume	ImageMode = G-03A2,SRT,2D mode; Method =VM12228-03,MRUS,Gibson
SV(A4C)	F-32120,SRT,Stroke Volume	ImageMode = G-03A2,SRT,2D mode; ImageView = G-A19C,SRT,Apical four chamber; Method =125208,DCM,Method of Disks, Single Plane
LVOT CO	F-32100,SRT,Cardiac Output	
CO(SP Ellipse)	F-32100,SRT,Cardiac Output	ImageMode = G-03A2,SRT,2D mode; Method =125226,DCM,Single Plane Ellipse
CO(BP Ellipse)	F-32100,SRT,Cardiac Output	ImageMode = G-03A2,SRT,2D mode; Method =125211,DCM,Biplane Ellipse

MODALITY Label	*DICOM Mapping*	*Optional Modifiers*
CO(Bullet)	F-32100,SRT,Cardiac Output	ImageMode = G-03A2,SRT,2D mode; Method =VM12228-01,MRUS,Bullet
CO(Mod.Simpson)	F-32100,SRT,Cardiac Output	ImageMode = G-03A2,SRT,2D mode; Method =VM12228-02,MRUS,Method of Disks,Simpson
CO(A2C)	F-32100,SRT,Cardiac Output	ImageMode = G-03A2,SRT,2D mode; Method =125208,DCM,Method of Disks, Single Plane
CO(Simpson BP)	F-32100,SRT,Cardiac Output	ImageMode = G-03A2,SRT,2D mode; Method =125207,DCM,Method of Disks, Biplane
CO2(Simpson BP)	F-32100,SRT,Cardiac Output	ImageMode = G-03A2,SRT,2D mode; ImageView = G-A19B,SRT,Apical two chamber; Method =125207,DCM,Method of Disks, Biplane
CO4(Simpson BP)	F-32100,SRT,Cardiac Output	ImageMode = G-03A2,SRT,2D mode; ImageView = G-A19C,SRT,Apical four chamber; Method =125207,DCM,Method of Disks, Biplane
CO(Cube-M)	F-32100,SRT,Cardiac Output	ImageMode = G-0394,SRT,M Mode; Method =125206,DCM,Cube Method
CO(Teich-M)	F-32100,SRT,Cardiac Output	ImageMode = G-0394,SRT,M Mode; Method =125209,DCM,Teichholz
CO(Gibson-M)	F-32100,SRT,Cardiac Output	ImageMode = G-0394,SRT,M Mode; Method =VM12228-03,MRUS,Gibson
CO(Cube-2D)	F-32100,SRT,Cardiac Output	ImageMode = G-03A2,SRT,2D mode; Method =125206,DCM,Cube Method
CO(Teich-2D)	F-32100,SRT,Cardiac Output	ImageMode = G-03A2,SRT,2D mode; Method =125209,DCM,Teichholz
CO(Gibson-2D)	F-32100,SRT,Cardiac Output	ImageMode = G-03A2,SRT,2D mode; Method =VM12228-03,MRUS,Gibson
CO(A4C)	F-32100,SRT,Cardiac Output	ImageMode = G-03A2,SRT,2D mode; ImageView = G-A19C,SRT,Apical four chamber; Method =125208,DCM,Method of Disks, Single Plane
LVOT CI	F-32110,SRT,Cardiac Index	
CI(SP Ellipse)	F-32110,SRT,Cardiac Index	ImageMode = G-03A2,SRT,2D mode; Method =125226,DCM,Single Plane Ellipse
CI(BP Ellipse)	F-32110,SRT,Cardiac Index	ImageMode = G-03A2,SRT,2D mode; Method =125211,DCM,Biplane Ellipse
CI(Bullet)	F-32110,SRT,Cardiac Index	ImageMode = G-03A2,SRT,2D mode; Method =VM12228-01,MRUS,Bullet
CI(Mod.Simpson)	F-32110,SRT,Cardiac Index	ImageMode = G-03A2,SRT,2D mode; Method =VM12228-02,MRUS,Method of Disks,Simpson
CI(A2C)	F-32110,SRT,Cardiac Index	ImageMode = G-03A2,SRT,2D mode; Method =125208,DCM,Method of Disks, Single Plane
CI(Simpson BP)	F-32110,SRT,Cardiac Index	ImageMode = G-03A2,SRT,2D mode; Method =125207,DCM,Method of Disks, Biplane
CI2(Simpson BP)	F-32110,SRT,Cardiac Index	ImageMode = G-03A2,SRT,2D mode; ImageView = G-A19B,SRT,Apical two chamber; Method =125207,DCM,Method of Disks, Biplane
CI4(Simpson BP)	F-32110,SRT,Cardiac Index	ImageMode = G-03A2,SRT,2D mode; ImageView = G-A19C,SRT,Apical four chamber; Method =125207,DCM,Method of Disks, Biplane
CI(Cube-M)	F-32110,SRT,Cardiac Index	ImageMode = G-0394,SRT,M Mode; Method =125206,DCM,Cube Method
CI(Teich-M)	F-32110,SRT,Cardiac Index	ImageMode = G-0394,SRT,M Mode; Method =125209,DCM,Teichholz

MODALITY Label	*DICOM Mapping*	*Optional Modifiers*
CI(Gibson-M)	F-32110,SRT,Cardiac Index	ImageMode = G-0394,SRT,M Mode; Method =VM12228-03,MRUS,Gibson
CI(Cube-2D)	F-32110,SRT,Cardiac Index	ImageMode = G-03A2,SRT,2D mode; Method =125206,DCM,Cube Method
CI(Teich-2D)	F-32110,SRT,Cardiac Index	ImageMode = G-03A2,SRT,2D mode; Method =125209,DCM,Teichholz
CI(Gibson-2D)	F-32110,SRT,Cardiac Index	ImageMode = G-03A2,SRT,2D mode; Method =VM12228-03,MRUS,Gibson
CI(A4C)	F-32110,SRT,Cardiac Index	ImageMode = G-03A2,SRT,2D mode; ImageView = G-A19C,SRT,Apical four chamber; Method =125208,DCM,Method of Disks, Single Plane
LVOT SI	F-00078,SRT,Stroke Index	
SI(SP Ellipse)	F-00078,SRT,Stroke Index	ImageMode = G-03A2,SRT,2D mode; Method =125226,DCM,Single Plane Ellipse
SI(BP Ellipse)	F-00078,SRT,Stroke Index	ImageMode = G-03A2,SRT,2D mode; Method =125211,DCM,Biplane Ellipse
SI(Bullet)	F-00078,SRT,Stroke Index	ImageMode = G-03A2,SRT,2D mode; Method =VM12228-01,MRUS,Bullet
SI(Mod.Simpson)	F-00078,SRT,Stroke Index	ImageMode = G-03A2,SRT,2D mode; Method =VM12228-02,MRUS,Method of Disks,Simpson
SI(A2C)	F-00078,SRT,Stroke Index	ImageMode = G-03A2,SRT,2D mode; Method =125208,DCM,Method of Disks, Single Plane
SI(Simpson BP)	F-00078,SRT,Stroke Index	ImageMode = G-03A2,SRT,2D mode; Method =125207,DCM,Method of Disks, Biplane
SI2(Simpson BP)	F-00078,SRT,Stroke Index	ImageMode = G-03A2,SRT,2D mode; ImageView = G-A19B,SRT,Apical two chamber; Method =125207,DCM,Method of Disks, Biplane
SI4(Simpson BP)	F-00078,SRT,Stroke Index	ImageMode = G-03A2,SRT,2D mode; ImageView = G-A19C,SRT,Apical four chamber; Method =125207,DCM,Method of Disks, Biplane
SI(Cube-M)	F-00078,SRT,Stroke Index	ImageMode = G-0394,SRT,M Mode; Method =125206,DCM,Cube Method
SI(Teich-M)	F-00078,SRT,Stroke Index	ImageMode = G-0394,SRT,M Mode; Method =125209,DCM,Teichholz
SI(Gibson-M)	F-00078,SRT,Stroke Index	ImageMode = G-0394,SRT,M Mode; Method =VM12228-03,MRUS,Gibson
SI(Cube-2D)	F-00078,SRT,Stroke Index	ImageMode = G-03A2,SRT,2D mode; Method =125206,DCM,Cube Method
SI(Teich-2D)	F-00078,SRT,Stroke Index	ImageMode = G-03A2,SRT,2D mode; Method =125209,DCM,Teichholz
SI(Gibson-2D)	F-00078,SRT,Stroke Index	ImageMode = G-03A2,SRT,2D mode; Method =VM12228-03,MRUS,Gibson
SI(A4C)	F-00078,SRT,Stroke Index	G-03A2,SRT,2D mode; ImageView = G-A19C,SRT,Apical four chamber; Method =125208,DCM,Method of Disks, Single Plane

Right Ventricle Measurements

MODALITY Label	*DICOM Mapping*	*Optional Modifiers*
RVDd(2D)	20304-2,LN,Right Ventricular Internal Diastolic Dimension	ImageMode = G-03A2,SRT,2D mode;
RVDd(M)	20304-2,LN,Right Ventricular Internal Diastolic Dimension	ImageMode = G-0394,SRT,M Mode;
RVDs(2D)	20305-9,LN,Right Ventricular Internal Systolic Dimension	ImageMode = G-03A2,SRT,2D mode;
RVDs(M)	20305-9,LN,Right Ventricular Internal Systolic Dimension	ImageMode = G-0394,SRT,M Mode;
RVIMP	G-0381,SRT,Right Ventricular Index of Myocardial Performance	
RVSP	G-0380,SRT,Right Ventricular Peak Systolic Pressure	

MODALITY Label	*DICOM Mapping*	*Optional Modifiers*
RVAWd(2D)	18153-7,LN,Right Ventricular Anterior Wall Diastolic Thickness	ImageMode = G-03A2,SRT,2D mode;
RVAWd(M)	18153-7,LN,Right Ventricular Anterior Wall Diastolic Thickness	ImageMode = G-0394,SRT,M Mode;
RVAWs(2D)	18157-8,LN,Right Ventricular Anterior Wall Systolic Thickness	ImageMode = G-03A2,SRT,2D mode;
RVAWs(M)	18157-8,LN,Right Ventricular Anterior Wall Systolic Thickness	ImageMode = G-0394,SRT,M Mode;
RV Major	M12204-01,MRUS,Right ventricular Major	ImageMode = G-03A2,SRT,2D mode;
RV Minor	M12204-02,MRUS,Right ventricular Minor	ImageMode = G-03A2,SRT,2D mode;
RV Area(d)	M12204-03,MRUS,Right ventricular Area at end-diastole	ImageMode = G-03A2,SRT,2D mode;
RV Area(s)	M12204-04,MRUS,Right ventricular Area at end-systole	ImageMode = G-03A2,SRT,2D mode;
RV FAC	C12204-03,MRUS,Right Ventricular Fractional Area Change	ImageMode = G-03A2,SRT,2D mode; Method=VM12228-02,MRUS,Method of Disks,Simpson
RVPEP(M)	M12204-05,MRUS,Right Ventricle Pre-Ejection Period	ImageMode = G-0394,SRT,M Mode;
RVPEP(Doppler)	M12204-05,MRUS,Right Ventricle Pre-Ejection Period	
RVET(M)	M12204-06,MRUS,Right Ventricle Ejection Time	ImageMode = G-0394,SRT,M Mode;
RVET(RVIMP)	M12204-06,MRUS,Right Ventricle Ejection Time	
RVET(Doppler)	M12204-06,MRUS,Right Ventricle Ejection Time	
RVPEP/ET(M)	C12204-01,MRUS,Right Ventricle Pre-Ejection Period to Ejection Time Ratio	ImageMode = G-0394,SRT,M Mode;
RVPEP/ET(Doppler)	C12204-01,MRUS,Right Ventricle Pre-Ejection Period to Ejection Time Ratio	
RVOT HR	8867-4,LN,Heart rate	
RVOT Diam(2D)	G-038F,SRT,Cardiovascular Orifice Diameter	ImageMode = G-03A2,SRT,2D mode;
RVOT Diam(M)	G-038F,SRT,Cardiovascular Orifice Diameter	ImageMode = G-0394,SRT,M Mode;
RVOT Vmax	11726-7,LN,Peak Velocity	
RVOT Vmax(RVOT VTI)	11726-7,LN,Peak Velocity	
RVOT Vmean	20352-1,LN,Mean Velocity	
RVOT PGmax	20247-3,LN,Peak Gradient	
RVOT PGmax(RVOT VTI)	20247-3,LN,Peak Gradient	
RVOT PGmean	20256-4,LN,Mean Gradient	
RVOT VTI	20354-7,LN,Velocity Time Integral	
RVOT θ	M12222-01,MRUS,Angle	

Left Atrium Measurements

MODALITY Label	*DICOM Mapping*	*Optional Modifiers*
LA Diam(2D)	29469-4,LN,Left Atrium Antero-posterior Systolic Dimension	ImageMode = G-03A2,SRT,2D mode;
LA Diam(M)	29469-4,LN,Left Atrium Antero-posterior Systolic Dimension	ImageMode = G-0394,SRT,M Mode;
LA Diam(LA Vol A-L)	29469-4,LN,Left Atrium Antero-posterior Systolic Dimension	ImageMode = G-03A2,SRT,2D mode; Method = 125205,DCM,Area-Length Single Plane
LA Diam(LA/Ao-2D)	29469-4,LN,Left Atrium Antero-posterior Systolic Dimension	ImageMode = G-03A2,SRT,2D mode;
LA Diam(LA/Ao-M)	29469-4,LN,Left Atrium Antero-posterior Systolic Dimension	ImageMode = G-0394,SRT,M Mode;
LA/Ao(2D)	17985-3,LN,Left Atrium to Aortic Root Ratio	ImageMode = G-03A2,SRT,2D mode;
LA/Ao(M)	17985-3,LN,Left Atrium to Aortic Root Ratio	ImageMode = G-0394,SRT,M Mode;
LA Area	17977-0,LN,Left Atrium Systolic Area	ImageMode = G-03A2,SRT,2D mode;
LAA(A2C)	17977-0,LN,Left Atrium Systolic Area	ImageMode = G-03A2,SRT,2D mode; ImageView = G-A19B,SRT,Apical two chamber; Method = 125205,DCM,Area-Length Single Plane

MODALITY Label	*DICOM Mapping*	*Optional Modifiers*
LAA(A4C)	17977-0,LN,Left Atrium Systolic Area	ImageMode = G-03A2,SRT,2D mode; ImageView = G-A19C,SRT,Apical four chamber; Method = 125205,DCM,Area-Length Single Plane
LA Vol(A-L)	G-0383,SRT,Left Atrium Systolic Volume	ImageMode = G-03A2,SRT,2D mode; Method = 125205,DCM,Area-Length Single Plane
LA Vol(A2C)	G-0383,SRT,Left Atrium Systolic Volume	ImageMode = G-03A2,SRT,2D mode; ImageView = G-A19B,SRT,Apical two chamber; Method = 125208,DCM,Method of Disks, Single Plane
LA Vol(A4C)	G-0383,SRT,Left Atrium Systolic Volume	ImageMode = G-03A2,SRT,2D mode; ImageView = G-A19C,SRT,Apical four chamber; Method = 125208,DCM,Method of Disks, Single Plane
LA Major	M12205-01,MRUS,Left atrium Major	ImageMode = G-03A2,SRT,2D mode;
LA Minor	M12205-02,MRUS,Left atrium Minor	ImageMode = G-03A2,SRT,2D mode;
LeftA.AR/LA.M	C12205-01,MRUS,Aortic Root to Left Atrium Ratio	

Right Atrium Measurements

MODALITY Label	*DICOM Mapping*	*Optional Modifiers*
RAP	18070-3,LN,Right Atrium Systolic Pressure	
RA Area	17988-7,LN,Right Atrium Systolic Area	ImageMode = G-03A2,SRT,2D mode;
RA Major	M12206-01,MRUS,Right atrium Major	ImageMode = G-03A2,SRT,2D mode;
RA Minor	M12206-02,MRUS,Right atrium Minor	ImageMode = G-03A2,SRT,2D mode;
RA Vol(A4C)	M12206-03,MRUS,Right atrium Volume	ImageMode = G-03A2,SRT,2D mode; ImageView = G-A19C,SRT,Apical four chamber; Method = 125208,DCM,Method of Disks, Single Plane

Aortic Valve Measurements

MODALITY Label	*DICOM Mapping*	*Optional Modifiers*
ACS(2D)	17996-0,LN,Aortic Valve Cusp Separation	ImageMode = G-03A2,SRT,2D mode;
ACS(M)	17996-0,LN,Aortic Valve Cusp Separation	ImageMode = G-0394,SRT,M Mode;
AV AccT/ET	G-0382,SRT,Ratio of Aortic Valve Acceleration Time to Ejection Time	
AV HR	8867-4,LN,Heart rate	
AR Flow	33878-0,LN,Volume Flow	Flow Direction =R-42E61,SRT,Regurgitant Flow; Method =125216,DCM,Proximal Isovelocity Surface Area
AR Flow Rate	34141-2,LN,Peak Instantaneous Flow Rate	Flow Direction =R-42E61,SRT,Regurgitant Flow; ImageMode = R-409E2, SRT, Doppler Color Flow; Method =125216,DCM,Proximal Isovelocity Surface Area
AVA	G-038E,SRT,Cardiovascular Orifice Area	Flow Direction =R-42047,SRT,Antegrade Flow; ImageMode = G-03A2,SRT,2D mode; Method =125220,DCM,Planimetry
AVA(VTI)	G-038E,SRT,Cardiovascular Orifice Area	Flow Direction =R-42047,SRT,Antegrade Flow; Method =125215,DCM,Continuity Equation by Velocity Time Integral
AV Diam(2D)	G-038F,SRT,Cardiovascular Orifice Diameter	ImageMode = G-03A2,SRT,2D mode;
AV Diam(Qp/Qs)	G-038F,SRT,Cardiovascular Orifice Diameter	ImageMode = G-03A2,SRT,2D mode;
AR Fraction	G-0390,SRT,Regurgitant Fraction	Flow Direction =R-42E61,SRT,Regurgitant Flow; Method =125216,DCM,Proximal Isovelocity Surface Area
AR Ved	11653-3,LN,End Diastolic Velocity	Flow Direction = R-42E61,SRT,Regurgitant Flow

MODALITY Label	*DICOM Mapping*	*Optional Modifiers*
AV Vmax	11726-7,LN,Peak Velocity	Flow Direction = R-42047,SRT,Antegrade Flow;
AR Vmax	11726-7,LN,Peak Velocity	Flow Direction = R-42E61,SRT,Regurgitant Flow;
AR Vmax(AR VTI)	11726-7,LN,Peak Velocity	Flow Direction = R-42E61,SRT,Regurgitant Flow;
AR Vmax(AR PHT)	11726-7,LN,Peak Velocity	Flow Direction = R-42E61,SRT,Regurgitant Flow;
AR Vmax(PISA AR)	11726-7,LN,Peak Velocity	Flow Direction = R-42E61,SRT,Regurgitant Flow; Method =125216,DCM,Proximal Isovelocity Surface Area
AV Vmax(AV VTI)	11726-7,LN,Peak Velocity	Flow Direction = R-42047,SRT,Antegrade Flow;
AV Vmean	20352-1,LN,Mean Velocity	Flow Direction = R-42047,SRT,Antegrade Flow;
AR Vmean	20352-1,LN,Mean Velocity	Flow Direction = R-42E61,SRT,Regurgitant Flow;
AV PGmax	20247-3,LN,Peak Gradient	Flow Direction = R-42047,SRT,Antegrade Flow;
AR PGmax	20247-3,LN,Peak Gradient	Flow Direction = R-42E61,SRT,Regurgitant Flow;
AV PGmax(AV VTI)	20247-3,LN,Peak Gradient	Flow Direction = R-42047,SRT,Antegrade Flow;
AR PGmax(AR VTI)	20247-3,LN,Peak Gradient	Flow Direction = R-42E61,SRT,Regurgitant Flow;
AR PGmax(AR PHT)	20247-3,LN,Peak Gradient	Flow Direction = R-42E61,SRT,Regurgitant Flow;
AV PGmean	20256-4,LN,Mean Gradient	Flow Direction = R-42047,SRT,Antegrade Flow;
AR PGmean	20256-4,LN,Mean Gradient	Flow Direction = R-42E61,SRT,Regurgitant Flow;
AV VTI	20354-7,LN,Velocity Time Integral	Flow Direction = R-42047,SRT,Antegrade Flow;
AR VTI	20354-7,LN,Velocity Time Integral	Flow Direction = R-42E61,SRT,Regurgitant Flow;
AV VTI(Qp/Qs)	20354-7,LN,Velocity Time Integral	Flow Direction = R-42047,SRT,Antegrade Flow;
AR VTI(PISA AR)	20354-7,LN,Velocity Time Integral	Flow Direction = R-42E61,SRT,Regurgitant Flow; Method =125216,DCM,Proximal Isovelocity Surface Area
AV VTI(AVA VTI)	20354-7,LN,Velocity Time Integral	Flow Direction = R-42047,SRT,Antegrade Flow;
AR PHT	20280-4,LN,Pressure Half-Time	Flow Direction = R-42E61,SRT,Regurgitant Flow;
AV AccT	20168-1,LN,Acceleration Time	Flow Direction = R-42047,SRT,Antegrade Flow;
AV DecT	20217-6,LN,Deceleration Time	Flow Direction = R-42047,SRT,Antegrade Flow;
AR DcT	20217-6,LN,Deceleration Time	Flow Direction = R-42E61,SRT,Regurgitant Flow;
AR DecT	20217-6,LN,Deceleration Time	Flow Direction = R-42E61,SRT,Regurgitant Flow;
AV Dec Slope	20216-8,LN,Deceleration Slope	Flow Direction = R-42047,SRT,Antegrade Flow;
AR Dec Slope	20216-8,LN,Deceleration Slope	Flow Direction = R-42E61,SRT,Regurgitant Flow;
AV Acc Slope	M12222-02,MRUS,Acceleration Slope	Flow Direction = R-42047,SRT,Antegrade Flow;
AR Rad	M12222-06,MRUS,Flow Radius	Flow Direction = R-42E61,SRT,Regurgitant Flow; ImageMode = R-409E2, SRT, Doppler Color Flow;

MODALITY Label	*DICOM Mapping*	*Optional Modifiers*
AR Als.Vel	M12222-05,MRUS,Aliasing Velocity	Flow Direction = R-42E61,SRT,Regurgitant Flow; ImageMode = R-409E2, SRT, Doppler Color Flow;
AR Time	M12222-04,MRUS,Time	Flow Direction = R-42E61,SRT,Regurgitant Flow;
AR DcR	M12222-03,MRUS,Deceleration Rate	Flow Direction = R-42E61,SRT,Regurgitant Flow;
AV θ	M12222-01,MRUS,Angle	Flow Direction = R-42047,SRT,Antegrade Flow;
AR θ	M12222-01,MRUS,Angle	Flow Direction = R-42E61,SRT,Regurgitant Flow;
AV SV	F-32120,SRT,Stroke Volume	
AV CO	F-32100,SRT,Cardiac Output	
AV CI	F-32110,SRT,Cardiac Index	
AV SI	F-00078,SRT,Stroke Index	
PISA	M12222-09,MRUS, Effective Regurgitant Orifice Area	

Mitral Valve Measurements

MODALITY Label	*DICOM Mapping*	*Optional Modifiers*
MV A Vel	17978-8 LN Mitral Valve A-Wave Peak Velocity	Image Mode = G-0394,SRT,M Mode
MV A Vel	17978-8,LN,Mitral Valve A-Wave Peak Velocity	
MV A Vel(MV A VTI)	17978-8,LN,Mitral Valve A-Wave Peak Velocity	
MV A Vel(MV E/A)	17978-8,LN,Mitral Valve A-Wave Peak Velocity	
MV E Vel	18037-2,LN,Mitral Valve E-Wave Peak Velocity	
MV E Vel(MV E VTI)	18037-2,LN,Mitral Valve E-Wave Peak Velocity	
MV E Vel(MV E/A)	18037-2,LN,Mitral Valve E-Wave Peak Velocity	
MV E/A	18038-0,LN,Mitral Valve E to A Ratio	
MV E/A(MV E/A)	18038-0,LN,Mitral Valve E to A Ratio	
MV AccT/DecT	G-0386,SRT,Mitral Valve AT/DT Ratio	
MV E-F Slope	18040-6,LN,Mitral Valve E-F Slope by M-Mode	ImageMode = G-0394,SRT,M Mode ;
EPSS(2D)	18036-4,LN,Mitral Valve EPSS, E wave	ImageMode = G-03A2,SRT,2D mode ;
EPSS(M)	18036-4,LN,Mitral Valve EPSS, E wave	ImageMode = G-0394,SRT,M Mode ;
MV A Dur	G-0385,SRT,Mitral Valve A-Wave Duration	
MV C-O dur(M)	G-0387,SRT,Mitral Valve Closure to Opening Time	ImageMode = G-0394,SRT,M Mode ;
MV C-O dur(Doppler)	G-0387,SRT,Mitral Valve Closure to Opening Time	
dP/dt	18035-6,LN,Mitral Regurgitation Dp/dt derived from Mitral Reg. velocity	Flow Direction =R-42E61,SRT,Regurgitant Flow;
MCS(2D)	M12207-01,MRUS,Mitral valve cusp separate distance	ImageMode = G-03A2,SRT,2D mode ;
MCS(M)	M12207-01,MRUS,Mitral valve cusp separate distance	ImageMode = G-0394,SRT,M Mode ;
MV D-E Slope	M12207-02,MRUS,Mitral Valve D-E Slope	ImageMode = G-0394,SRT,M Mode ;
MV A Amp	M12207-03,MRUS,Amplitude of the A wave	ImageMode = G-0394,SRT,M Mode ;
MV E Amp	M12207-04,MRUS,Amplitude of the E wave	ImageMode = G-0394,SRT,M Mode ;
MV DE	M12207-05,MRUS,Amplitude from D Point to E Point	ImageMode = G-0394,SRT,M Mode ;
MV E PG	M12207-06,MRUS,Mitral Valve E-wave Pressure Gradient	
MV A PG	M12207-07,MRUS,Mitral Valve A-wave Pressure Gradient	
MV E VTI	M12207-08,MRUS,E wave Velocity Time Integral	Flow Direction =R-42047,SRT,Antegrade Flow;
MV A VTI	M12207-09,MRUS,A wave Velocity Time Integral	Flow Direction =R-42047,SRT,Antegrade Flow;
MV E Dur	M12207-10,MRUS,Mitral Valve E-Wave Duration	
Sa(medial)	M12207-11,MRUS,Systolic Velocity of the Mitral Annulus(medial)	ImageMode = IM12224-01,MRUS,Tissue Doppler Imaging;
Ea(medial)	M12207-12,MRUS,Early diastolic velocity of the mitral annulus(medial)	ImageMode = IM12224-01,MRUS,Tissue Doppler Imaging;

MODALITY Label	*DICOM Mapping*	*Optional Modifiers*
Aa(medial)	M12207-13,MRUS,Late diastolic velocity of the mitral annulus(medial)	ImageMode = IM12224-01,MRUS,Tissue Doppler Imaging;
Ea/Aa(medial)	M12207-14,MRUS,Early diastolic velocity to Late diastolic velocity Ratio	ImageMode = IM12224-01,MRUS,Tissue Doppler Imaging;
Ata(medial)	M12207-15,MRUS,Acceleration Time of Early diastolic velocity	ImageMode = IM12224-01,MRUS,Tissue Doppler Imaging;
Ara(medial)	M12207-16,MRUS,Acceleration Rate of Early diastolic velocity	ImageMode = IM12224-01,MRUS,Tissue Doppler Imaging;
Dta(medial)	M12207-17,MRUS,Deceleration Time of Early diastolic velocity	ImageMode = IM12224-01,MRUS,Tissue Doppler Imaging;
Dra(medial)	M12207-18,MRUS,Deceleration Rate of Early diastolic velocity	ImageMode = IM12224-01,MRUS,Tissue Doppler Imaging;
Sa(lateral)	M12207-19,MRUS,Systolic Velocity of the Mitral Annulus(lateral)	ImageMode = IM12224-01,MRUS,Tissue Doppler Imaging;
Ea(lateral)	M12207-20,MRUS,Early diastolic velocity of the mitral annulus(lateral)	ImageMode = IM12224-01,MRUS,Tissue Doppler Imaging;
Aa(lateral)	M12207-21,MRUS,Late diastolic velocity of the mitral annulus(lateral)	ImageMode = IM12224-01,MRUS,Tissue Doppler Imaging;
Ea/Aa(lateral)	M12207-22,MRUS,Early diastolic velocity to Late diastolic velocity Ratio	ImageMode = IM12224-01,MRUS,Tissue Doppler Imaging;
Ata(lateral)	M12207-23,MRUS,Acceleration Time of Early diastolic velocity	ImageMode = IM12224-01,MRUS,Tissue Doppler Imaging;
Ara(lateral)	M12207-24,MRUS,Acceleration Rate of Early diastolic velocity	ImageMode = IM12224-01,MRUS,Tissue Doppler Imaging;
Dta(lateral)	M12207-25,MRUS,Deceleration Time of Early diastolic velocity	ImageMode = IM12224-01,MRUS,Tissue Doppler Imaging;
Dra(lateral)	M12207-26,MRUS,Deceleration Rate of Early diastolic velocity	ImageMode = IM12224-01,MRUS,Tissue Doppler Imaging;
MS Rad	M12207-27,MRUS,Mitral Stenosis Radius	ImageMode = R-409E2, SRT, Doppler Color Flow; Method = 125216,DCM,Proximal Isovelocity Surface Area
MS Als.Vel	M12207-28,MRUS,Mitral Stenosis Aliasing Velocity	ImageMode = R-409E2, SRT, Doppler Color Flow; Method = 125216,DCM,Proximal Isovelocity Surface Area
MS Vmax	M12207-29,MRUS,Mitral Stenosis Maximum Velocity	
MS Vmax(PISA MS)	M12207-29,MRUS,Mitral Stenosis Maximum Velocity	Method = 125216,DCM,Proximal Isovelocity Surface Area
MS Area	M12207-30,MRUS,Mitral Stenosis Area	Method = 125216,DCM,Proximal Isovelocity Surface Area
MS Pgmax	C12207-01,MRUS,Mitral Stenosis Maximum Pressure Gradient	
MV HR	8867-4,LN,Heart rate	
MR Flow	33878-0,LN,Volume Flow	Flow Direction =R-42E61,SRT,Regurgitant Flow; Method = 125216,DCM,Proximal Isovelocity Surface Area
MR Flow Rate	34141-2,LN,Peak Instantaneous Flow Rate	Flow Direction =R-42E61,SRT,Regurgitant Flow; ImageMode = R-409E2, SRT, Doppler Color Flow; Method = 125216,DCM,Proximal Isovelocity Surface Area
MVA	G-038E,SRT,Cardiovascular Orifice Area	Flow Direction =R-42047,SRT,Antegrade Flow; ImageMode = G-03A2,SRT,2D mode; Method = 125220,DCM,Planimetry
MVA(PHT)	G-038E,SRT,Cardiovascular Orifice Area	Flow Direction =R-42047,SRT,Antegrade Flow; Method = 125210,DCM,Area by Pressure Half-Time
MVA(VTI)	G-038E,SRT,Cardiovascular Orifice Area	Flow Direction =R-42047,SRT,Antegrade Flow; Method = 125215,DCM,Continuity Equation by Velocity Time Integral

MODALITY Label	*DICOM Mapping*	*Optional Modifiers*
MV Diam	G-038F,SRT,Cardiovascular Orifice Diameter	Flow Direction =R-42047,SRT,Antegrade Flow; ImageMode = G-03A2,SRT,2D mode;
MR Fraction	G-0390,SRT,Regurgitant Fraction	Flow Direction =R-42E61,SRT,Regurgitant Flow; Method = 125216,DCM,Proximal Isovelocity Surface Area
MV Vmax	11726-7,LN,Peak Velocity	Flow Direction =R-42047,SRT, Antegrade Flow;
MR Vmax	11726-7,LN,Peak Velocity	Flow Direction =R-42E61,SRT,Regurgitant Flow; ImageMode = G-03A2,SRT,2D mode;
MV Vmax(MV PHT)	11726-7,LN,Peak Velocity	Flow Direction =R-42047,SRT, Antegrade Flow;
MV Vmax(MV VTI)	11726-7,LN,Peak Velocity	Flow Direction =R-42047,SRT, Antegrade Flow;
MR Vmax(MR VTI)	11726-7,LN,Peak Velocity	Flow Direction =R-42E61,SRT,Regurgitant Flow;
MR Vmax(PISA MR)	11726-7,LN,Peak Velocity	Flow Direction =R-42E61,SRT,Regurgitant Flow; Method = 125216,DCM,Proximal Isovelocity Surface Area
MV Vmean	20352-1,LN,Mean Velocity	Flow Direction =R-42047,SRT, Antegrade Flow;
MR Vmean	20352-1,LN,Mean Velocity	Flow Direction =R-42E61,SRT,Regurgitant Flow;
MV Pgmax	20247-3,LN,Peak Gradient	Flow Direction =R-42047,SRT, Antegrade Flow;
MR Pgmax	20247-3,LN,Peak Gradient	Flow Direction =R-42E61,SRT,Regurgitant Flow;
MV Pgmean	20256-4,LN,Mean Gradient	Flow Direction =R-42047,SRT, Antegrade Flow;
MR Pgmean	20256-4,LN,Mean Gradient	Flow Direction =R-42E61,SRT,Regurgitant Flow;
MV VTI	20354-7,LN,Velocity Time Integral	Flow Direction =R-42047,SRT, Antegrade Flow;
MR VTI	20354-7,LN,Velocity Time Integral	Flow Direction =R-42E61,SRT,Regurgitant Flow;
MV VTI(MVA VTI)	20354-7,LN,Velocity Time Integral	Flow Direction =R-42047,SRT, Antegrade Flow;
MR VTI(PISA MR)	20354-7,LN,Velocity Time Integral	Flow Direction =R-42E61,SRT,Regurgitant Flow; Method = 125216,DCM,Proximal Isovelocity Surface Area
MV PHT	20280-4,LN,Pressure Half-Time	Flow Direction =R-42047,SRT, Antegrade Flow;
MV AccT	20168-1,LN,Acceleration Time	Flow Direction =R-42047,SRT, Antegrade Flow;
MV DecT	20217-6,LN,Deceleration Time	Flow Direction =R-42047,SRT, Antegrade Flow;
MV Dec Slope	20216-8,LN,Deceleration Slope	Flow Direction =R-42047,SRT, Antegrade Flow;
MV Acc Slope	M12222-02,MRUS,Acceleration Slope	Flow Direction =R-42047,SRT, Antegrade Flow;
dt	M12222-04,MRUS,Time	Flow Direction =R-42E61,SRT,Regurgitant Flow;
MR Rad	M12222-06,MRUS,Flow Radius	Flow Direction =R-42E61,SRT,Regurgitant Flow; ImageMode = R-409E2, SRT, Doppler Color Flow;
MR Als.Vel	M12222-05,MRUS,Aliasing Velocity	Flow Direction =R-42E61,SRT,Regurgitant Flow; ImageMode = R-409E2, SRT, Doppler Color Flow;
MV θ	M12222-01,MRUS,Angle	Flow Direction =R-42047,SRT,Antegrade Flow;
MR θ	M12222-01,MRUS,Angle	Flow Direction =R-42E61,SRT,Regurgitant Flow;

MODALITY Label	*DICOM Mapping*	*Optional Modifiers*
MV SV	F-32120,SRT,Stroke Volume	
MV CO	F-32100,SRT,Cardiac Output	
MV CI	F-32110,SRT,Cardiac Index	
MV SI	F-00078,SRT,Stroke Index	
E/Ea	M12207-35,MRUS,MV E/Ea	
PISA	M12222-09,MRUS, Effective Regurgitant Orifice Area	
MAPSE	M12207-39,MRUS,Mitral Annular Plane Systolic Excursion	ImageMode = G-0394,SRT,M Mode

Pulmonic Valve Measurements

MODALITY Label	*DICOM Mapping*	*Optional Modifiers*
PVθ	M12222-01,MRUS,Angle	Flow Direction =R-42047,SRT,Antegrade Flow;
PRθ	M12222-01,MRUS,Angle	Flow Direction =R-42E61,SRT,Regurgitant Flow;
PV HR	8867-4,LN,Heart rate	
PR Flow	33878-0,LN,Volume Flow	Flow Direction =R-42E61,SRT,Regurgitant Flow; Method = 125216,DCM,Proximal Isovelocity Surface Area
PR Flow Rate	34141-2,LN,Peak Instantaneous Flow Rate	Flow Direction =R-42E61,SRT,Regurgitant Flow; ImageMode = R-409E2, SRT, Doppler Color Flow; Method = 125216,DCM,Proximal Isovelocity Surface Area
PV Diam	G-038F,SRT,Cardiovascular Orifice Diameter	Flow Direction =R-42047,SRT,Antegrade Flow; ImageMode = G-03A2,SRT,2D mode;
PV Diam(Qp/Qs)	G-038F,SRT,Cardiovascular Orifice Diameter	Flow Direction =R-42047,SRT,Antegrade Flow; ImageMode = G-03A2,SRT,2D mode;
PR Fraction	G-0390,SRT,Regurgitant Fraction	Flow Direction =R-42E61,SRT,Regurgitant Flow; Method = 125216,DCM,Proximal Isovelocity Surface Area
PR Ved	11653-3,LN,End Diastolic Velocity	Flow Direction =R-42E61,SRT,Regurgitant Flow;
PR Ved(PAEDP)	11653-3,LN,End Diastolic Velocity	Flow Direction =R-42E61,SRT,Regurgitant Flow;
PV Vmax	11726-7,LN,Peak Velocity	Flow Direction =R-42047,SRT, Antegrade Flow;
PR Vmax	11726-7,LN,Peak Velocity	Flow Direction =R-42E61,SRT,Regurgitant Flow;
PV Vmax(PV VTI)	11726-7,LN,Peak Velocity	Flow Direction =R-42047,SRT, Antegrade Flow;
PR Vmax(PR VTI)	11726-7,LN,Peak Velocity	Flow Direction =R-42E61,SRT,Regurgitant Flow;
PR Vmax(PR PHT)	11726-7,LN,Peak Velocity	Flow Direction =R-42E61,SRT,Regurgitant Flow;
PR Vmax(PISA PR)	11726-7,LN,Peak Velocity	Flow Direction =R-42E61,SRT,Regurgitant Flow;
PV Vmean	20352-1,LN,Mean Velocity	Flow Direction =R-42047,SRT, Antegrade Flow;
PR Vmean	20352-1,LN,Mean Velocity	Flow Direction =R-42E61,SRT,Regurgitant Flow;
PV PGmax	20247-3,LN,Peak Gradient	Flow Direction =R-42047,SRT,Antegrade Flow;
PR PGmax	20247-3,LN,Peak Gradient	Flow Direction =R-42E61,SRT,Regurgitant Flow;
PV PGmax(PV VTI)	20247-3,LN,Peak Gradient	Flow Direction =R-42047,SRT, Antegrade Flow;
PR PGmax(PR VTI)	20247-3,LN,Peak Gradient	Flow Direction =R-42E61,SRT,Regurgitant Flow;
PR PGmax(PR PHT)	20247-3,LN,Peak Gradient	Flow Direction =R-42E61,SRT,Regurgitant Flow;

MODALITY Label	*DICOM Mapping*	*Optional Modifiers*
PV PGmean	20256-4,LN,Mean Gradient	Flow Direction =R-42047,SRT,Antegrade Flow;
PR PGmean	20256-4,LN,Mean Gradient	Flow Direction =R-42E61,SRT,Regurgitant Flow;
PV VTI	20354-7,LN,Velocity Time Integral	Flow Direction =R-42047,SRT,Antegrade Flow;
PR VTI	20354-7,LN,Velocity Time Integral	Flow Direction =R-42E61,SRT,Regurgitant Flow;
PV VTI(Qp/Qs)	20354-7,LN,Velocity Time Integral	Flow Direction =R-42047,SRT,Antegrade Flow;
PR VTI(PISA PR)	20354-7,LN,Velocity Time Integral	Flow Direction =R-42E61,SRT,Regurgitant Flow;
PR PHT	20280-4,LN,Pressure Half-Time	Flow Direction =R-42E61,SRT,Regurgitant Flow;
PV AccT	20168-1,LN,Acceleration Time	Flow Direction =R-42047,SRT,Antegrade Flow;
PR DecT	20217-6,LN,Deceleration Time	Flow Direction =R-42E61,SRT,Regurgitant Flow;
PR Dec Slope	20216-8,LN,Deceleration Slope	Flow Direction =R-42E61,SRT,Regurgitant Flow;
PV Acc Slope	M12222-02,MRUS,Acceleration Slope	Flow Direction =R-42047,SRT,Antegrade Flow;
PR Rad	M12222-06,MRUS,Flow Radius	Flow Direction =R-42E61,SRT,Regurgitant Flow; ImageMode = R-409E2, SRT, Doppler Color Flow;
PR Als.Vel	M12222-05,MRUS,Aliasing Velocity	Flow Direction =R-42E61,SRT,Regurgitant Flow; ImageMode = R-409E2, SRT, Doppler Color Flow;
PR PGed	M12222-08,MRUS,Presure Gradient at end-Diastole	Flow Direction =R-42E61,SRT,Regurgitant Flow;
PR PGed(PAEDP)	M12222-08,MRUS,Presure Gradient at end-Diastole	Flow Direction =R-42E61,SRT,Regurgitant Flow;
PV SV	F-32120,SRT,Stroke Volume	
PV CO	F-32100,SRT,Cardiac Output	
PV CI	F-32110,SRT,Cardiac Index	
PV SI	F-00078,SRT,Stroke Index	
PISA	M12222-09,MRUS, Effective Regurgitant Orifice Area	

Tricuspid Valve Measurements

MODALITY Label	*DICOM Mapping*	*Optional Modifiers*
TV E Vel	18031-5,LN,Tricuspid Valve E Wave Peak Velocity	
TV E Vel(TV E/A)	18031-5,LN,Tricuspid Valve E Wave Peak Velocity	
TV A Vel	18030-7,LN,Tricuspid Valve A Wave Peak Velocity	
TV A Vel(TV E/A)	18030-7,LN,Tricuspid Valve A Wave Peak Velocity	
TV E/A	18039-8,LN,Tricuspid Valve E to A Ratio	
TV E/A(TV E/A)	18039-8,LN,Tricuspid Valve E to A Ratio	
TV C-O dur	G-0389,SRT,Tricuspid Valve Closure to Opening Time	
TV θ	M12222-01,MRUS,Angle	Flow Direction =R-42047,SRT,Antegrade Flow;
TR θ	M12222-01,MRUS,Angle	Flow Direction =R-42E61,SRT,Regurgitant Flow;
TV HR	8867-4,LN,Heart rate	
TR Flow	33878-0,LN,Volume Flow	Flow Direction =R-42E61,SRT,Regurgitant Flow; Method = 125216,DCM,Proximal Isovelocity Surface Area
TR Flow Rate	34141-2,LN,Peak Instantaneous Flow Rate	Flow Direction =R-42E61,SRT,Regurgitant Flow; ImageMode = R-409E2, SRT, Doppler Color Flow; Method = 125216,DCM,Proximal Isovelocity Surface Area

MODALITY Label	*DICOM Mapping*	*Optional Modifiers*
TVA	G-038E,SRT,Cardiovascular Orifice Area	Flow Direction =R-42047,SRT, Antegrade Flow; ImageMode = G-03A2,SRT,2D mode; Method = 125220,DCM,Planimetry
TVA(PHT)	G-038E,SRT,Cardiovascular Orifice Area	Flow Direction =R-42047,SRT, Antegrade Flow; Method = 125210,DCM,Area by Pressure Half-Time
TV Diam	G-038F,SRT,Cardiovascular Orifice Diameter	Flow Direction =R-42047,SRT, Antegrade Flow; ImageMode = G-03A2,SRT,2D mode;
TR Fraction	G-0390,SRT,Regurgitant Fraction	Flow Direction =R-42E61,SRT,Regurgitant Flow; Method = 125216,DCM,Proximal Isovelocity Surface Area
TV Vmax	11726-7,LN,Peak Velocity	Flow Direction =R-42047,SRT, Antegrade Flow;
TR Vmax	11726-7,LN,Peak Velocity	Flow Direction =R-42E61,SRT,Regurgitant Flow;
TV Vmax(TV PHT)	11726-7,LN,Peak Velocity	Flow Direction =R-42047,SRT, Antegrade Flow;
TV Vmax(TV VTI)	11726-7,LN,Peak Velocity	Flow Direction =R-42047,SRT, Antegrade Flow;
TR Vmax(TR VTI)	11726-7,LN,Peak Velocity	Flow Direction =R-42E61,SRT,Regurgitant Flow;
TR Vmax(PISA TR)	11726-7,LN,Peak Velocity	Flow Direction =R-42E61,SRT,Regurgitant Flow; Method = 125216,DCM,Proximal Isovelocity Surface Area
TR Vmax(RVSP)	11726-7,LN,Peak Velocity	Flow Direction =R-42E61,SRT,Regurgitant Flow;
TV Vmean	20352-1,LN,Mean Velocity	Flow Direction =R-42047,SRT, Antegrade Flow;
TR Vmean	20352-1,LN,Mean Velocity	Flow Direction =R-42E61,SRT,Regurgitant Flow;
TV PGmax(TV PHT)	20247-3,LN,Peak Gradient	Flow Direction =R-42047,SRT, Antegrade Flow;
TV PGmax(TV VTI)	20247-3,LN,Peak Gradient	Flow Direction =R-42047,SRT, Antegrade Flow;
TV PGmax	20247-3,LN,Peak Gradient	Flow Direction =R-42047,SRT, Antegrade Flow;
TR PGmax	20247-3,LN,Peak Gradient	Flow Direction =R-42E61,SRT,Regurgitant Flow;
TR PGmax(TR VTI)	20247-3,LN,Peak Gradient	Flow Direction =R-42E61,SRT,Regurgitant Flow;
TR PGmax(RVSP)	20247-3,LN,Peak Gradient	Flow Direction =R-42E61,SRT,Regurgitant Flow;
TV PGmean	20256-4,LN,Mean Gradient	Flow Direction =R-42047,SRT, Antegrade Flow;
TR PGmean	20256-4,LN,Mean Gradient	Flow Direction =R-42E61,SRT,Regurgitant Flow;
TV VTI	20354-7,LN,Velocity Time Integral	Flow Direction =R-42047,SRT, Antegrade Flow;
TR VTI	20354-7,LN,Velocity Time Integral	Flow Direction =R-42E61,SRT,Regurgitant Flow;
TR VTI(PISA TR)	20354-7,LN,Velocity Time Integral	Flow Direction =R-42E61,SRT,Regurgitant Flow; Method =125216,DCM,Proximal Isovelocity Surface Area
TV PHT	20280-4,LN,Pressure Half-Time	Flow Direction =R-42E61,SRT,Regurgitant Flow;
TV AccT	20168-1,LN,Acceleration Time	Flow Direction =R-42047,SRT, Antegrade Flow;
TV DecT	20217-6,LN,Deceleration Time	Flow Direction =R-42E61,SRT,Regurgitant Flow;
TV Dec Slope	20216-8,LN,Deceleration Slope	Flow Direction =R-42E61,SRT,Regurgitant Flow;

MODALITY Label	*DICOM Mapping*	*Optional Modifiers*
TV A Dur	M12208-01,MRUS,Tricuspid Valve E-Wave Duration	Flow Direction =R-42047,SRT, Antegrade Flow;
TV E PG	M12208-02,MRUS,Tricuspid Valve E Wave Pressure Gradient	Flow Direction =R-42047,SRT, Antegrade Flow;
TV A PG	M12208-03,MRUS,Tricuspid Valve A Wave Pressure Gradient	Flow Direction =R-42047,SRT, Antegrade Flow;
TV Acc Slope	M12222-02,MRUS,Acceleration Slope	Flow Direction =R-42047,SRT, Antegrade Flow;
TV AccT/DecT	M12222-07,MRUS,Acceleration Time/Deceleration Time	Flow Direction =R-42047,SRT, Antegrade Flow;
TR Rad	M12222-06,MRUS,Flow Radius	Flow Direction =R-42E61,SRT,Regurgitant Flow; ImageMode = R-409E2, SRT, Doppler Color Flow;
TR Als.Vel	M12222-02,MRUS,Aliasing Velocity	ImageMode = R-409E2, SRT, Doppler Color Flow;
TV SV	F-32120,SRT,Stroke Volume	
TV CO	F-32100,SRT,Cardiac Output	
TV CI	F-32110,SRT,Cardiac Index	
TV SI	F-00078,SRT,Stroke Index	
PISA	M12222-09,MRUS, Effective Regurgitant Orifice Area	

Aorta Measurements

MODALITY Label	*DICOM Mapping*	*Optional Modifiers*
Ao Diam(2D)	18015-8,LN,Aortic Root Diameter	ImageMode = G-03A2,SRT,2D mode;
Ao Diam(M)	18015-8,LN,Aortic Root Diameter	ImageMode = G-0394,SRT,M Mode;
Ao Diam(LA/Ao-2D)	18015-8,LN,Aortic Root Diameter	ImageMode = G-03A2,SRT,2D mode;
Ao Diam(LA/Ao-M)	18015-8,LN,Aortic Root Diameter	ImageMode = G-0394,SRT,M Mode;
Ao Arch Diam(2D)	18011-7,LN,Aortic Arch Diameter	ImageMode = G-03A2,SRT,2D mode;
Ao Arch Diam(M)	18011-7,LN,Aortic Arch Diameter	ImageMode = G-0394,SRT,M Mode;
Ao Asc Diam(2D)	18012-5,LN,Ascending Aortic Diameter	ImageMode = G-03A2,SRT,2D mode;
Ao Asc Diam(M)	18012-5,LN,Ascending Aortic Diameter	ImageMode = G-0394,SRT,M Mode;
Ao Isthmus(2D)	18014-1,LN,Aortic Isthmus Diameter	ImageMode = G-03A2,SRT,2D mode;
Ao Isthmus(M)	18014-1,LN,Aortic Isthmus Diameter	ImageMode = G-0394,SRT,M Mode;
Ao Desc Diam(2D)	18013-3,LN,Descending Aortic Diameter	ImageMode = G-03A2,SRT,2D mode;
Ao Desc Diam(M)	18013-3,LN,Descending Aortic Diameter	ImageMode = G-0394,SRT,M Mode;
Ao st junct(2D)	M12212-01,MRUS,Aortic Sinotubular junction Diameter	ImageMode = G-03A2,SRT,2D mode;
Ao st junct(M)	M12212-01,MRUS,Aortic Sinotubular junction Diameter	ImageMode = G-0394,SRT,M Mode;
Ao Sinus Diam(2D)	M12212-02,MRUS,Aortic Sinus Diameter	ImageMode = G-03A2,SRT,2D mode;
Ao Sinus Diam(M)	M12212-02,MRUS,Aortic Sinus Diameter	ImageMode = G-0394,SRT,M Mode;
Duct Art Diam	M12212-03,MRUS,Ductus Artery Diameter	ImageMode = G-03A2,SRT,2D mode;
Pre Ductal	M12212-04,MRUS,Previous Ductal Diameter	ImageMode = G-03A2,SRT,2D mode;
LCA	M12212-05,MRUS,Left Coronary Artery Diameter	ImageMode = G-03A2,SRT,2D mode;
RCA	M12212-06,MRUS,Right Coronary Artery Diameter	ImageMode = G-03A2,SRT,2D mode;
AAo Vmax	11726-7,LN,Peak Velocity	
DAo Vmax	11726-7,LN,Peak Velocity	
AAo PGmax	20247-3,LN,Peak Gradient	
DAo PGmax	20247-3,LN,Peak Gradient	

Pulmonary Artery Measurements

MODALITY Label	*DICOM Mapping*	*Optional Modifiers*
MPA Diam(2D)	18020-8,LN,Main Pulmonary Artery Diameter	ImageMode =G-03A2,SRT,2D mode;
MPA Diam(M)	18020-8,LN,Main Pulmonary Artery Diameter	ImageMode =G-0394,SRT,M Mode;
RPA Diam(2D)	18021-6,LN,Right Pulmonary Artery Diameter	ImageMode =G-03A2,SRT,2D mode;
RPA Diam(M)	18021-6,LN,Right Pulmonary Artery Diameter	ImageMode =G-0394,SRT,M Mode;
LPA Diam(2D)	18019-0,LN,Left Pulmonary Artery Diameter	ImageMode =G-03A2,SRT,2D mode;
LPA Diam(M)	18019-0,LN,Left Pulmonary Artery Diameter	ImageMode =G-0394,SRT,M Mode;
MPA Vmax	G-038A,SRT,Main Pulmonary Artery Peak Velocity	
Post Ductal	M12210-01,MRUS,Posterior ductal Diameter	ImageMode =G-03A2,SRT,2D mode;

MODALITY Label	*DICOM Mapping*	*Optional Modifiers*
PAEDP	C12210-01,MRUS,Pulmonary Artery End Diastolic Pressure	
LPA Vmax	11726-7,LN,Peak Velocity	
RPA Vmax	11726-7,LN,Peak Velocity	
MPA PGmax	20247-3,LN,Peak Gradient	
LPA PGmax	20247-3,LN,Peak Gradient	
RPA PGmax	20247-3,LN,Peak Gradient	

Vena Cava Measurements

MODALITY Label	*DICOM Mapping*	*Optional Modifiers*
IVC Diam(Insp)	18006-7,LN,Inferior Vena Cava Diameter	RespiratoryCyclePoint=F-20010,SRT, Inspiration; ImageMode =G-03A2,SRT,2D mode;
IVC Diam(Expir)	18006-7,LN,Inferior Vena Cava Diameter	RespiratoryCyclePoint=F-20020,SRT, Expiration; ImageMode =G-03A2,SRT,2D mode;
SVC Diam(Insp)	M12215-01,MRUS,Superior Vena Cava Diameter	RespiratoryCyclePoint=F-20010,SRT, Inspiration; ImageMode =G-03A2,SRT,2D mode;
SVC Diam(Expir)	M12215-01,MRUS,Superior Vena Cava Diameter	RespiratoryCyclePoint=F-20020,SRT, Expiration; ImageMode =G-03A2,SRT,2D mode;
IVC Vel(Insp)	M12215-02,MRUS,Inferior Vena Cava Velocity	RespiratoryCyclePoint=F-20010,SRT, Inspiration;
IVC Vel(Expir)	M12215-02,MRUS,Inferior Vena Cava Velocity	RespiratoryCyclePoint=F-20020,SRT, Expiration;
SVC Vel(Insp)	M12215-03,MRUS,Superior Vena Cava Velocity	RespiratoryCyclePoint=F-20010,SRT, Inspiration;
SVC Vel(Expir)	M12215-03,MRUS,Superior Vena Cava Velocity	RespiratoryCyclePoint=F-20020,SRT, Expiration;
IVC Inspiration PG	C12215-01,MRUS,Inferior Vena Cava Pressure Gradient	RespiratoryCyclePoint=F-20010,SRT, Inspiration;
IVC Expiration PG	C12215-01,MRUS,Inferior Vena Cava Pressure Gradient	RespiratoryCyclePoint=F-20020,SRT, Expiration;
SVC Inspiration PG	C12215-02,MRUS,Superior Vena Cava Pressure Gradient	RespiratoryCyclePoint=F-20010,SRT, Inspiration;
SVC Expiration PG	C12215-02,MRUS,Superior Vena Cava Pressure Gradient	RespiratoryCyclePoint=F-20020,SRT, Expiration;
IVC-CI	C12215-03,MRUS,Collapsible index of inferior vena cava	ImageMode =SRT,G-03A2,2D mode
IVC-DI	C12215-04,MRUS,Distensibility index of inferior vena cava	ImageMode =SRT,G-03A2,2D mode
SVC-CI	C12215-05,MRUS,Collapsible index of superior vena cava	ImageMode =SRT,G-03A2,2D mode
SVC-DI	C12215-06,MRUS,Distensibility index of superior vena cava	ImageMode =SRT,G-03A2,2D mode

Pulmonary Venous Structure Measurements

MODALITY Label	*DICOM Mapping*	*Optional Modifiers*
PVein A Dur	G-038B,SRT,Pulmonary Vein A-Wave Duration	
PVein D VTI	G-038D,SRT,Pulmonary Vein D-Wave Velocity Time Integral	
PVein S VTI	G-038C,SRT,Pulmonary Vein S-Wave Velocity Time Integral	
PVein S Vel	M12214-01,MRUS,Pulmonary Vein S wave flow Velocity	
PVein D Vel	M12214-02,MRUS,Pulmonary Vein D-wave flow Velocity	
PVein A Vel	M12214-03,MRUS,Pulmonary Vein A-wave flow Velocity	
PVein DecT	M12214-04,MRUS,Pulmonary Vein Deceleration Time	
PVein S/D	M12214-05,MRUS,Pulmonary Vein Ratio of S-Wave velocity to D-wave velocity	
PVein SF	M12214-06,MRUS,Pulmonary Vein Systolic fraction	

Cardiac Shunt Study Measurements

MODALITY Label	*DICOM Mapping*	*Optional Modifiers*
Qp/Qs	29462-9,LN,Pulmonary-to-Systemic Shunt Flow Ratio	
Qp-Qs	M12217-01,MRUS,Pulmonary-sub-Systemic Shunt Flow Difference	
PV HR(Qp/Qs)	8867-4,LN,Heart rate	
AV HR(Qp/Qs)	8867-4,LN,Heart rate	
PV SV(Qp/Qs)	F-32120,SRT,Stroke Volume	
PV CO(Qp/Qs)	F-32100,SRT,Cardiac Output	
AV SV(Qp/Qs)	F-32120,SRT,Stroke Volume	
AV CO(Qp/Qs)	F-32100,SRT,Cardiac Output	

Congenital Anomaly of Cardiovascular System Measurements

MODALITY Label	*DICOM Mapping*	*Optional Modifiers*
PDA Diam	M12218-01,MRUS,Patent Ductus Arteriosus Diameter	ImageMode =G-03A2,SRT,2D mode;
PFO Diam	M12218-02,MRUS,Patent Foramen Ovale Diameter	ImageMode =G-03A2,SRT,2D mode;
PDA Vel(d)	M12218-03,MRUS,Patent Ductus Arteriosus Diastolic Velocity	
PDA Vel(s)	M12218-04,MRUS,Patent Ductus Arteriosus Systolic Velocity	
Coarc Pre-Duct	M12218-05,MRUS,Coarctation of Pre-Ductus Velocity	
Coarc Post-Duct	M12218-06,MRUS,Coarctation of Post-Ductus Velocity	
PDA Dias PG	M12218-07,MRUS,Patent Ductus Arteriosus Diastolic Pressure Gradient	
PDA Sys PG	M12218-08,MRUS,Patent Ductus Arteriosus Systolic Pressure Gradient	
Coarc Pre-Duct PG	M12218-09,MRUS,Coarctation of Pre-Ductus Pressure Gradient	
Coarc Post-Duc PG	M12218-10,MRUS,Coarctation of Post-Ductus Pressure Gradient	
VSD Diam	G-038F,SRT,Cardiovascular Orifice Diameter	ImageMode =G-03A2,SRT,2D mode;
ASD Diam	G-038F,SRT,Cardiovascular Orifice Diameter	ImageMode =G-03A2,SRT,2D mode;
VSD Vmax	11726-7,LN,Peak Velocity	
ASD Vmax	11726-7,LN,Peak Velocity	
VSD PGmax	20247-3,LN,Peak Gradient	
ASD PGmax	20247-3,LN,Peak Gradient	

Pericardial Disease Measurements

MODALITY Label	*DICOM Mapping*	*Optional Modifiers*
PEd(2D)	C90000-01,MRUS,Pericard Effusion at end-diastole	ImageMode =G-03A2,SRT,2D mode;
PEd(M)	C90000-01,MRUS,Pericard Effusion at end-diastole	ImageMode =G-0394,SRT,M Mode;
PEs(2D)	C90000-02,MRUS,Pericard Effusion at end-systole	ImageMode =G-03A2,SRT,2D mode;
PEs(M)	C90000-02,MRUS,Pericard Effusion at end-systole	ImageMode =G-0394,SRT,M Mode;

Heart Rate Measurements

MODALITY Label	*DICOM Mapping*	*Optional Modifiers*
HR	8867-4, LN, Heart rate	Image Mode = G-0394,SRT,M Mode
HRSP.Ellipse	8867-4, LN, Heart rate	Method =125226,DCM,Single Plane Ellipse
HRBP.Ellipse	8867-4, LN, Heart rate	Method=125211,DCM,Biplane Ellipse

MODALITY Label	*DICOM Mapping*	*Optional Modifiers*
HRBullet	8867-4, LN, Heart rate	Method =VM12228-01,MRUS,Bullet
HRMod.Simp	8867-4, LN, Heart rate	Method= VM12228-02,MRUS,Method of Disks,Simpson
HRSimp.SP	8867-4, LN, Heart rate	Method= 125208,DCM,Method of Disks, Single Plane
HRSimp.SP.A4C	8867-4, LN, Heart rate	Method= 125208,DCM,Method of Disks, Single Plane
HRSimp.BP	8867-4, LN, Heart rate	Method= 125207,DCM,Method of Disks, Biplane
HRTeich.2D	8867-4, LN, Heart rate	Method= 125209,DCM,Teichholz
HRTeich.M	8867-4, LN, Heart rate	Method= 125209,DCM,Teichholz
HRCube.2D	8867-4, LN, Heart rate	Method= 125206,DCM,Cube Metho
HRCube.M	8867-4, LN, Heart rate	Method= 125206,DCM,Cube Method
HRGibson.2D	8867-4, LN, Heart rate	Method= VM12228-03,MRUS,Gibson
HRGibson.M	8867-4, LN, Heart rate	Method= VM12228-03,MRUS,Gibson

9.2 Vascular Structured Reporting Template

This appendix lists the DICOM Structured Report (SR) mappings used in the Vascular Structured Reports of ultrasound system SR files.

The mappings are organized in a manner similar to the DICOM SR Templates as described in PS 3.16 of the DICOM Standard. The Vascular Report mappings follow the DICOM SR Template TID 5100: Vascular Ultrasound Procedure Report, except where noted.

All private code values use the Coding Scheme Designator "MRUS".

TID (5100) Vascular Ultrasoud Report

This is the template for the root the content tree for the vascular ultrasound procedure report.

	NL	Rel with Parent	VT	Concept Name	Used in Modality	Value Set Constraint	Comment
1			CONTAINER	EV (125100, DCM, “Vascular Ultrasound Procedure Report”)	√		
2	>	HAS OBS CONTEXT	CODE	EV (R-40FB8, SRT, “Temporal periods Relating to Procedure”)		DCID (12102) Temporal Periods Relating To Procedure or Therapy	
3	>	HAS CONCEPT MOD	INCL UDE	DTID (1204) Language of Content Item and Descendants			
4	>	HAS OBS CONTEXT	INCLUDE	DTID (1001) Observation Context	√		

	NL	Rel with Parent	VT	Concept Name	Used in Modality	Value Set Constraint	Comment
5	>	CONTAINS	INCLUDE	DTID (5101) Vascular Patient Characteristics	√		
6	>	CONTAINS	CONTAINER	EV (111028, DCM, “Image Library”)	√		
7	>>	CONTAINS	IMAGE	No purpose of reference	√		
8	>	CONTAINS	INCLUDE	DTID (5102) Vascular Procedure Summary Section	√		
9	>	CONTAINS	INCLUDE	DTID (5103) Vascular Ultrasound Section	√	$SectionScope = DT (T-40501, SRT, ”Blood Vessel of Head”) $SectionLaterality = EV (G-A101, SRT, ”Left”) $Anatomy = DCID (12105) Intracranial Cerebral Vessels	
10	>	CONTAINS	INCLUDE	DTID (5103) Vascular Ultrasound Section	√	$SectionScope = DT (T-40501, SRT, ”Blood Vessel of Head”) $SectionLaterality = EV (G-A100, SRT, ”Right”) $Anatomy = DCID (12105) Intracranial Cerebral Vessels	
11	>	CONTAINS	INCLUDE	DTID (5103) Vascular Ultrasound Section	√	$SectionScope = DT (T-40501, SRT, ”Blood Vessel of Head”) $SectionLaterality = EV (G-A103, SRT, ”Unilateral”) $Anatomy = DCID (12106) Intracranial Cerebral Vessels (unilateral)	
12	>	CONTAINS	INCLUDE	DTID (5103) Vascular Ultrasound Section	√	$SectionScope = DT (T-45005, SRT, ”Artery of neck”) $SectionLaterality = EV (G-A101, SRT, ”Left”) $Anatomy = DCID (12104) Extracranial Arteries $AnatomyRatio = DCID (12123) Carotid Ratios	

	NL	Rel with Parent	VT	Concept Name	Used in Modality	Value Set Constraint	Comment
13	>	CONTAINS	INCLUDE	DTID (5103) Vascular Ultrasound Section	√	$SectionScope = DT (T-45005, SRT, ”Artery of neck”) $SectionLaterality = EV (G-A100, SRT, ”Right”) $Anatomy = DCID (12104) Extracranial Arteries $AnatomyRatio = DCID (12123) Carotid Ratios	
14	>	CONTAINS	INCLUDE	DTID (5103) Vascular Ultrasound Section	√	$SectionScope = DT (T-47040, SRT, ”Artery of Lower Extremity”) $SectionLaterality = EV (G-A101, SRT, ”Left”) $Anatomy = DCID (12109) Lower Extremity Arteries $AnatomyRatio = 8581-1,LN,Tibial/brachial index	
15	>	CONTAINS	INCLUDE	DTID (5103) Vascular Ultrasound Section	√	$SectionScope = DT (T-47040, SRT, ”Artery of Lower Extremity”) $SectionLaterality = EV (G-A100, SRT, ”Right”) $Anatomy = DCID (12109) Lower Extremity Arteries $AnatomyRatio = 8581-1,LN,Tibial/brachial index	
16	>	CONTAINS	INCLUDE	DTID (5103) Vascular Ultrasound Section	√	$SectionScope = DT (T-49403, SRT, ”Vein of Lower Extremity”) $SectionLaterality = EV (G-A101, SRT, ”Left”) $Anatomy = DCID (12110) Lower Extremity Veins	
17	>	CONTAINS	INCLUDE	DTID (5103) Vascular Ultrasound Section	√	$SectionScope = DT (T-49403, SRT, ”Vein of Lower Extremity”) $SectionLaterality = EV (G-A100, SRT, ”Right”) $Anatomy = DCID (12110) Lower Extremity Veins	

	NL	Rel with Parent	VT	Concept Name	Used in Modality	Value Set Constraint	Comment
18	>	CONTAINS	INCLUDE	DTID (5103) Vascular Ultrasound Section	√	$SectionScope = DT (T-47020, SRT, ”Artery Of Upper Extremity”) $SectionLaterality = EV (G-A101, SRT, ”Left”) $Anatomy = DCID (12107) Upper Extremity Arteries	
19	>	CONTAINS	INCLUDE	DTID (5103) Vascular Ultrasound Section	√	$SectionScope = DT (T-47020, SRT, ”Artery Of Upper Extremity”) $SectionLaterality = EV (G-A100, SRT, ”Right”) $Anatomy = DCID (12107) Upper Extremity Arteries	
20	>	CONTAINS	INCLUDE	DTID (5103) Vascular Ultrasound Section	√	$SectionScope = DT (T-47020, SRT, ”Artery Of Upper Extremity”) $SectionLaterality = EV (G-A100, SRT, ” Unilateral”) $Anatomy = DCID (SELFCID-2) Upper Extremity Arteries(unilateral)	
21	>	CONTAINS	INCLUDE	DTID (5103) Vascular Ultrasound Section	√	$SectionScope = DT (T-49103, SRT, ”Vein Of Upper Extremity”) $SectionLaterality = EV (G-A101, SRT, ”Left”) $Anatomy = DCID (12108) Upper Extremity Veins	
22	>	CONTAINS	INCLUDE	DTID (5103) Vascular Ultrasound Section	√	$SectionScope = DT (T-49103, SRT, ”Vein Of Upper Extremity”) $SectionLaterality = EV (G-A100, SRT, ”Right”) $Anatomy = DCID (12108) Upper Extremity Veins	
23	>	CONTAINS	INCLUDE	DTID (5103) Vascular Ultrasound Section		$SectionScope = DT (T-46002, SRT, ”Artery of Abdomen”) $SectionLaterality = EV (G-A101, SRT, ”Left”) $Anatomy = DCID (12111) Abdominal Arteries (lateral)	

	NL	Rel with Parent	VT	Concept Name	Used in Modality	Value Set Constraint	Comment
24	>	CONTAINS	INCLUDE	DTID (5103) Vascular Ultrasound Section		$SectionScope = DT (T-46002, SRT, ”Artery of Abdomen”) $SectionLaterality = EV (G-A100, SRT, ”Right”) $Anatomy = DCID (12111) Abdominal Arteries (lateral)	
25	>	CONTAINS	INCLUDE	DTID (5103) Vascular Ultrasound Section	√	$SectionScope = DT (T-46002, SRT, ”Artery of Abdomen”) $SectionLaterality = EV (G-A103, SRT, ”Unilateral”) $Anatomy = DCID (12112) Abdominal Arteries (unilateral)	
26	>	CONTAINS	INCLUDE	DTID (5103) Vascular Ultrasound Section		$SectionScope = DT (T-487A0, SRT, ”Vein of Abdomen”) $SectionLaterality = EV (G-A101, SRT, ”Left”) $Anatomy = DCID (12113) Abdominal Veins (lateral)	
27	>	CONTAINS	INCLUDE	DTID (5103) Vascular Ultrasound Section		$SectionScope = DT (T-487A0, SRT, ”Vein of Abdomen”) $SectionLaterality = EV (G-A100, SRT, ”Right”) $Anatomy = DCID (12113) Abdominal Veins (lateral)	
28	>	CONTAINS	INCLUDE	DTID (5103) Vascular Ultrasound Section	√	$SectionScope = DT (T-487A0, SRT, ” Vein of Abdomen”) $SectionLaterality = EV (G-A103, SRT, ”Unilateral”) $Anatomy = DCID (12114) Abdominal Veins (unilateral)	
29	>	CONTAINS	INCLUDE	DTID (5103) Vascular Ultrasound Section	√	$SectionScope = DT (T-71019, SRT, ”Vascular Structure Of Kidney”) $SectionLaterality = EV (G-A101, SRT, ”Left”) $Anatomy = DCID (12115) Renal Vessels	

	NL	Rel with Parent	VT	Concept Name	Used in Modality	Value Set Constraint	Comment
30	>	CONTAINS	INCLUDE	DTID (5103) Vascular Ultrasound Section	√	$SectionScope = DT (T-71019, SRT, ”Vascular Structure Of Kidney”) $SectionLaterality = EV (G-A100, SRT, ”Right”) $Anatomy = DCID (12115) Renal Vessels	
31	>	CONTAINS	INCLUDE	DTID (5105) Ultrasound Graft Section			
32	>	CONTAINS	TEXT	(20121120,MRUS, “self-defined-Measurementfile”)	√		

TID (1001) Observation Context

This template specifies attributes of observation context that may be defined, extended or replaced at any location in the SR tree.

	NL	Rel with Parent	VT	Concept Name	Used in Modality	Value Set Constraint	Comment
1	>	HAS OBS CONTEXT	CODE	EV (121005,DCM, “Observer Type”)	√	(121006,DCM, “Person”)	
2	>	HAS OBS CONTEXT	PNAME	EV (121008,DCM, “Person Observer Name”)	√	Operator from Info	
3	>	HAS OBS CONTEXT	TEXT	EV (121009,DCM, “ Person Observer’s Organization Name”)	√	Institution Name (0008,0080) of the General Equipment Module	
4	>	HAS OBS CONTEXT	CODE	EV (121010,DCM, “ Person Observer’s Role in the Organization”)	√	(121093, DCM, "Sonographer")	
5	>	HAS OBS CONTEXT	CODE	EV (121024, DCM, "Subject Class”)	√	(121025, DCM, "Patient”)	
6	>	HAS OBS CONTEXT	PNAME	EV (121029,DCM, "Subject Name”)	√	value of Patient’s Name (0010,0010) in Patient Module	
7	>	HAS OBS CONTEXT	DATE	EV (121031,DCM, "Subject Birth Date”)	√	value of Patient’s Birth Date (0010,0030) in Patient Module	
8	>	HAS OBS CONTEXT	CODE	EV (121032,DCM, "Subject Sex”)	√	value equivalent to Patient’s Sex (0010,0040) in Patient Module	
9	>	HAS OBS CONTEXT	NUM	EV (121033,DCM, "Subject Age”)	√	value of Patient’s Age (0010,1010) in Patient Study Module	

TID (5101) Vascular Patient Characteristics

	NL	Rel with Parent	VT	Concept Name	Used in Modality	Value Set Constraint	Comment
1			CONTAINER	EV (121118, DCM, “Patient Characteristics”)			
2	>	CONTAINS	NUM	EV (121033, DCM, "Subject Age”)	√	Units = DCID (7456) Units of Measure for Age	
3	>	CONTAINS	CODE	EV (121032, DCM, "Subject Sex”)	√	DCID (7455) Sex	
4	>	CONTAINS	NUM	EV (8867-4, LN, “Heart Rate”)			
5	>	CONTAINS	NUM	EV (F-008EC, SRT, “Systolic Blood Pressure”)	√		
6	>	CONTAINS	NUM	EV (F-008ED, SRT, "Diastolic Blood Pressure")	√		

TID (5102) Vascular Procedure Summary Section

	NL	Rel with Parent	VT	Concept Name	Used in Modality	Value Set Constraint	COMMENT
1			CONTAINER	DT (121111, DCM, “Summary”)			
2	>	CONTAINS	TEXT	DCID (12101) Vascular Summary	√		from Info comment
3	>	CONTAINS	TEXT	(I12101-01,MRUS,"Primary Indications")	√		from Info
4	>	CONTAINS	TEXT	(I12101-02,MRUS,"Secondary Indications")	√		from Info
5	>	CONTAINS	TEXT	(I12101-03,MRUS,"CPT4 Code")	√		from Info
6	>	CONTAINS	TEXT	(I12101-04,MRUS,"CPT4 Description")	√		from Info
7	>	CONTAINS	TEXT	EV (121106, DCM, "Comment")	√		From report interface Comment
8	>	CONTAINS	TEXT	(I12101-05,MRUS,"Prompt")	√		From report interface Prompt
9	>	CONTAINS	TEXT	(121071,DCM,"Findings")	√		From report interface Findings
10	>	CONTAINS	CONTAINER	(T-45100, SNM3, Common carotid artery)	√		
11	>>	CONTAINS	CONTAINER	(FG3495-01, MRUS, Plaque Description)	√		

	NL	Rel with Parent	VT	Concept Name	Used in Modality	Value Set Constraint	COMMENT
12	>>>	CONTAINS	TEXT	(G-A100,SNM3,Right)	√		
13	>>>	CONTAINS	TEXT	(G-A101,SNM3,Left)	√		
14	>>	CONTAINS	CONTAINER	(FG3495-02, MRUS, Plaque Area)	√		
15	>>>	CONTAINS	TEXT	(G-A100,SNM3,Right)	√		
16	>>>	CONTAINS	TEXT	(G-A101,SNM3,Left)	√		
17	>	CONTAINS	CONTAINER	(T-45160,SRT,Carotid Bifurcation)	√		
18	>>	CONTAINS	CONTAINER	(FG3495-01, MRUS, Plaque Description)	√		
19	>>>	CONTAINS	TEXT	(G-A100,SNM3,Right)	√		
20	>>>	CONTAINS	TEXT	(G-A101,SNM3,Left)	√		
21	>>	CONTAINS	CONTAINER	(FG3495-02, MRUS, Plaque Area)	√		
22	>>>	CONTAINS	TEXT	(G-A100,SNM3,Right)	√		
23	>>>	CONTAINS	TEXT	(G-A101,SNM3,Left)	√		
24	>	CONTAINS	CONTAINER	(T-45300, SRT, Internal Carotid Artery)	√		ICA
25	>>	CONTAINS	CONTAINER	(FG3495-01, MRUS, Plaque Description)	√		
26	>>>	CONTAINS	TEXT	(G-A100,SNM3,Right)	√		
27	>>>	CONTAINS	TEXT	(G-A101,SNM3,Left)	√		
28	>>	CONTAINS	CONTAINER	(FG3495-02, MRUS, Plaque Area)	√		
29	>>>	CONTAINS	TEXT	(G-A100,SNM3,Right)	√		
30	>>>	CONTAINS	TEXT	(G-A101,SNM3,Left)	√		
31	>	CONTAINS	CONTAINER	(T-45200,SRT,External Carotid Artery)	√		ECA
32	>>	CONTAINS	CONTAINER	(FG3495-01, MRUS, Plaque Description)	√		
33	>>>	CONTAINS	TEXT	(G-A100,SNM3,Right)	√		
34	>>>	CONTAINS	TEXT	(G-A101,SNM3,Left)	√		
35	>>	CONTAINS	CONTAINER	(FG3495-02, MRUS, Plaque Area)	√		
36	>>>	CONTAINS	TEXT	(G-A100,SNM3,Right)	√		
37	>>>	CONTAINS	TEXT	(G-A101,SNM3,Left)	√		
38	>	CONTAINS	CONTAINER	(T-45700 ,SRT ,Vertebral Artery)	√		
39	>>	CONTAINS	TEXT	(G-A100,SNM3,Right)	√		
40	>>	CONTAINS	TEXT	(G-A101,SNM3,Left)	√		
41	>	CONTAINS	CONTAINER	(T-46100,SRT,Subclavian Artery)	√		
42	>>	CONTAINS	TEXT	(G-A100,SNM3,Right)	√		
43	>>	CONTAINS	TEXT	(G-A101,SNM3,Left)	√		

	NL	Rel with Parent	VT	Concept Name	Used in Modality	Value Set Constraint	COMMENT
44	>	CONTAINS	TEXT	(T-46010,SRT,Brachiocephalic trunk)	√		

TID (5103) Vascular Ultrasound Section

	NL	Rel with Parent	VT	Concept Name	Used in Modality	Value Set Constraint	Comment
1			CONTAINER	DT (121070, DCM, “Findings”)	√		
2	>	HAS CONCEPT MOD	CODE	EV (G-C0E3, SRT, “Finding Site”)	√	$SectionScope	
3	>	HAS CONCEPT MOD	CODE	EV (G-C171, SRT, “Laterality”)	√	$SectionLaterality	
4	>	CONTAINS	INCLUDE	DTID (5104) Vascular Measurement Group	√	$AnatomyGroup = $Anatomy= DCID (12105) Intracranial Cerebral Vessels	
5	>	CONTAINS	INCLUDE	DTID (300) Measurement	√	$Measurement = $AnatomyRatio	Only for Artery of neck

TID (5104) Vascular Ultrasound Measurement Group

	NL	Rel with Parent	VT	Concept Name	Used in Modality	Value Set Constraint	Comment
1			CONTAINER	$AnatomyGroup	√		
2	>	HAS CONCEPT MOD	CODE	EV (G-A1F8, SRT, “Topographical Modifier”)	√	DCID (12116) Vessel Segment Modifiers	
3	>	HAS CONCEPT MOD	CODE	EV (125101, DCM, “Vessel Branch”)		DCID (12117) Vessel Branch Modifiers	
4	>	CONTAINS	INCLUDE	DTID (300) Measurement	√	$Measurement = DCID (12119) Vascular Ultrasound Property $Derivation = DCID (3627) Measurement Type	
5	>>	HAS CONCEPT MOD	CODE	EV (R-4089A, SRT, “Cardiac Cycle Point”)		DCID (12233) Cardiac Phase	
6	>>	HAS CONCEPT MOD	CODE	EV (R-41FFC, SRT, “Temporal period related to eating”)		DT (G-A491, SRT, "Post-prandial")	

CID (12104) Extracranial Arteries

CSD	CV	Code Meaning
SRT	T-45170	Carotid Bulb
SRT	T-45100	Common Carotid Artery
SRT	T-45200	External Carotid Artery

CSD	CV	Code Meaning
SRT	T-45300	Internal Carotid Artery
SRT	T-46100	Subclavian Artery
SRT	T-45700	Vertebral Artery

CID (12105) Intracranial Cerebral Vessels

CSD	CV	Code Meaning
SRT	T-45540	Anterior Cerebral Artery
SRT	T-45600	Middle Cerebral Artery
SRT	T-45900	Posterior Cerebral Artery
SRT	T-45320	Posterior Communicating Artery

CID (12106) Intracranial Cerebral Vessels (unilateral)

CSD	CV	Code Meaning
SRT	T-45800	Basilar Artery
SRT	T-45530	Anterior Communicating Artery
MRUS	V12106-01	Basilar Vein

CID (12107) Upper Extremity Arteries

CSD	CV	Code Meaning
SRT	T-47100	Axillary Artery
SRT	T-47160	Brachial Artery
SRT	T-47300	Radial Artery
SRT	T-46100	Subclavian Artery
SRT	T-47200	Ulnar Artery

CID (SELFCID-2) Upper Extremity Arteries(unilateral)

CSD	CV	Code Meaning
SRT	T-46010	Innominate Artery

CID (12108) Upper Extremity Veins

CSD	CV	Code Meaning
SRT	T-49110	Axillary vein
SRT	T-48052	Basilic vein
SRT	T-49350	Brachial vein
SRT	T-49240	Cephalic vein
SRT	T-49340	Radial vein
SRT	T-48330	Subclavian vein
SRT	T-49330	Ulnar vein

CID (12109) Lower Extremity Arteries

CSD	CV	Code Meaning
SRT	T-46710	Common Iliac Artery
SRT	T-47700	Anterior Tibial Artery
SRT	T-47400	Common Femoral Artery
SRT	T-47741	Dorsalis Pedis Artery
SRT	T-46910	External Iliac Artery
SRT	T-46740	Internal Iliac Artery
SRT	T-47630	Peroneal Artery
SRT	T-47500	Popliteal Artery
SRT	T-47600	Posterior Tibial Artery
SRT	T-47440	Profunda Femoris Artery
SRT	T-47403	Superficial Femoral Artery
MRUS	V12109-01	TP Trunk Artery

CID (12110) Lower Extremity Veins

CSD	CV	Code Meaning
SRT	T-49630	Anterior Tibial Vein
SRT	G-035B	Common Femoral Vein
SRT	T-48920	Common Iliac Vein
SRT	T-48930	External Iliac Vein
SRT	T-4942D	Gastrocnemius vein
SRT	T-49530	Great Saphenous Vein
SRT	T-49550	Lesser Saphenous Vein
SRT	T-49650	Peroneal Vein
SRT	T-49640	Popliteal Vein
SRT	T-49620	Posterior Tibial Vein
SRT	T-49660	Profunda Femoris Vein
SRT	G-036B	Soleal vein
SRT	G-035A	Superficial Femoral Vein
SRT	T-48940	Internal iliac vein
SRT	T-49410	Femoral vein
MRUS	V12110-01	TP Trunk Vein

CID (12112) Abdominal Arteries (unilateral)

CSD	CV	Code Meaning
SRT	T-42000	Aorta
SRT	T-46400	Celiac Axis
SRT	T-46421	Common Hepatic Artery

CSD	CV	Code Meaning
SRT	T-46422	Proper Hepatic Artery
SRT	T-46460	Splenic Artery
SRT	T-46510	Superior Mesenteric Artery
SRT	T-46520	Inferior Mesenteric Artery

CID (12114) Abdominal Veins (unilateral)

CSD	CV	Code Meaning
SRT	T-48720	Hepatic Vein
SRT	T-48726	Middle Hepatic Vein
SRT	T-48810	Portal Vein
SRT	T-48710	Inferior Vena Cava
SRT	T-48890	Splenic Vein
SRT	T-48840	Superior Mesenteric Vein
MRUS	V12114-01	Main Portal Vein
MRUS	SRT	Inferior Mesenteric Vein

CID (12115) Renal Vessels

CSD	CV	Code Meaning
SRT	T-46600	Renal Artery
SRT	T-48740	Renal Vein
SRT	T-46659	Segmental Artery
SRT	T-4668A	Arcuate Artery of the Kidney
SRT	T-4667D	Interlobar Artery of Kidney
MRUS	V12115-01	Main Renal Artery

CID (12116) Vessel Segment Modifiers

CSD	CV	Code Meaning
SRT	G-A119	Distal
SRT	G-A188	Mid-longitudinal
SRT	G-036A	Origin of vessel
SRT	G-A118	Proximal
SRT	R-1025B	Dilated portion of segment
SRT	R-40775	None

Mapping between Modality measurements and DICOM Concepts

Vascular Measurements

MODALITY Label	*DICOM Mapping*	
<Vasculature Anatomic Location> ED	11653-3, LN, End Diastolic Velocity	
<Vasculature Anatomic Location> MD	11665-7 , LN, Minimum Diastolic Velocity	
<Vasculature Anatomic Location> PS	11726-7, LN, Peak Systolic Velocity	
<Vasculature Anatomic Location> TAMEAN	20352-1, LN, Time averaged mean velocity	
<Vasculature Anatomic Location> TAMAX	11692-1, LN, Time averaged peak velocity	
<Vasculature Anatomic Location> PV	11726-7, LN, Peak Velocity	
<Vasculature Anatomic Location> PI	12008-9, LN, Pulsatility Index	
<Vasculature Anatomic Location> RI	12023-8, LN, Resistivity Index	
<Vasculature Anatomic Location> S/D	12144-2, LN, Systolic to Diastolic Velocity Ratio	
<Vasculature Anatomic Location> D/S	M12119-04, MRUS, Diastolic to SystolicVelocity Ratio	
<Vasculature Anatomic Location> AT	20168-1, LN, Acceleration Time	
<Vasculature Anatomic Location> DT	20217-6, LN, Deceleration Time	
<Vasculature Anatomic Location> PPG	20247-3, LN, Peak Gradient	
<Vasculature Anatomic Location> MPG	20256-4, LN, Mean Gradient	
<Vasculature Anatomic Location> MMPG	M12119-01, MRUS, Mean Velocity Mean Pressure Gradient	
<Vasculature Anatomic Location> VTI	M12119-02, MRUS,Velocity-Time Integral	
<Vasculature Anatomic Location> HR	8867-4, LN, Heart Rate	
<Vasculature Anatomic Location> θ	M12119-03, MRUS, Angle	
<Vasculature Anatomic Location> VD	R-1025C, SRT, Vessel Intimal Diameter	
<Vasculature Anatomic Location> VolFlow	M12119-06, MRUS, Vol Flow(TAMAX)	
<Vasculature Anatomic Location> VolFlow.TAMEAN	M12119-07, MRUS,Vol Flow(TAMEAN)	

MODALITY Label	*DICOM Mapping*	
<Vasculature Anatomic Location>Reflux time	M12119-11,MRUS,Reflux time	C.Iliac V Reflux time; Ex.Iliac V Reflux time; IIV Reflux time; Femoral V Reflux time; CFV Reflux time; DFV Reflux time; SFV Reflux time; Popliteal V Reflux time; TP Trunk V Reflux time; Sural V Reflux time; Soleal V Reflux time; Peroneal V Reflux time; P.Tib. V Reflux time; Saph V Reflux time; SSV Reflux time; IVC Reflux time; A.Tib. V Reflux time;
<Vasculature Anatomic Location> Splenic V Diam	M12119-12,MRUS,Splenic V Diam	Splenic Vein
<Vasculature Anatomic Location> Splenic A Diam	M12119-13,MRUS,Splenic A Diam	Splenic Arteries
<Vasculature Anatomic Location> Aorta Sten D	C12119-1,MRUS,Aorta Sten D	Abdominal Arteries
<Vasculature Anatomic Location> Aorta Sten A	C12119-2,MRUS,Aorta Sten A	Abdominal Arteries
<Vasculature Anatomic Location> Aneurysm Length	M12119-14,MRUS,Aneurysm Length	Abdominal Arteries
<Vasculature Anatomic Location> Aneurysm Height	M12119-15,MRUS,Aneurysm Height	Abdominal Arteries
<Vasculature Anatomic Location> Aneurysm Width	M12119-16,MRUS,Aneurysm Width	Abdominal Arteries
<Vasculature Anatomic Location> Aorta Diam H	M12119-17,MRUS,Aorta Diam Heith	Abdominal Arteries
<Vasculature Anatomic Location> Aorta Diam W	M12119-18, MRUS,Aorta Diam Width	Abdominal Arteries

Extracranial Arteries

MODALITY Label	*DICOM Mapping*
Bulb	T-45170,SRT,Carotid Bulb
CCA	T-45100,SRT,Common Carotid Artery
ECA	T-45200,SRT,External Carotid Artery
ICA	T-45300,SRT,Internal Carotid Artery
Subclav A	T-46100,SRT,Subclavian Artery
Vert A	T-45700,SRT,Vertebral Artery

Intracranial Cerebral Vessels

MODALITY Label	*DICOM Mapping*
ACA	T-45540,SRT,Anterior Cerebral Artery
MCA	T-45600,SRT,Middle Cerebral Artery
PCA	T-45900,SRT,Posterior Cerebral Artery

MODALITY Label	*DICOM Mapping*
PComA	T-45320,SRT,Posterior Communicating Artery

Intracranial Cerebral Vessels (unilateral)

MODALITY Label	*DICOM Mapping*
BA	T-45800,SRT,Basilar Artery
AComA	T-45530,SRT,Anterior Communicating Artery
Ba V	V12106-01,MRUS,Basilar Vein

Upper Extremity Arteries

MODALITY Label	*DICOM Mapping*
Axill A	T-47100,SRT,Axillary Artery
Brachial	T-47160, SRT, Brachial Artery
Radial A	T-47300,SRT,Radial Artery
Subclav	T-46100, SRT, Subclavian Artery
Ulnar A	T-47200,SRT ,Ulnar Artery

Upper Extremity Arteries(unilateral)

MODALITY Label	*DICOM Mapping*
Innom A	T-46010, SRT, Innominate Artery

Upper Extremity Veins

MODALITY Label	*DICOM Mapping*
Axill V	T-49110,SRT ,Axillary vein
Basilic V	T-48052,SRT,Basilic vein
Brachial V	T-49350,SRT,Brachial vein
Cephalic V	T-49240,SRT,Cephalic vein
Radial V	T-49340,SRT,Radial vein
Subclav V	T-48330,SRT,Subclavian vein
Ulnar V	T-49330,SRT,Ulnar vein

Lower Extremity Arteries

MODALITY Label	*DICOM Mapping*
C.Iliac A	T-46710,SRT,Common Iliac Artery
A.Tib A	T-47700,SRT ,Anterior Tibial Artery
CFA	T-47400,SRT ,Common Femoral Artery
Dors.Ped A	T-47741,SRT,Dorsalis Pedis Artery
Ex.Iliac A	T-46910,SRT ,External Iliac Artery
IIA	T-46740,SRT ,Internal Iliac Artery
Peroneal A	T-47630,SRT ,Peroneal Artery
Pop A	T-47500,SRT ,Popliteal Artery
P.Tib A	T-47600,SRT ,Posterior Tibial Artery
PFA	T-47440,SRT ,Profunda Femoris Artery
SFA	T-47403 ,SRT ,Superficial Femoral Artery
TP Trunk A	V12109-01,MRUS,TP Trunk Artery

Lower Extremity Veins

MODALITY Label	*DICOM Mapping*
A.Tib V	T-49630,SRT,Anterior Tibial Vein
CFV	G-035B,SRT,Common Femoral Vein
C.Iliac V	T-48920,SRT,Common Iliac Vein
Ex.Iliac V	T-48930,SRT,External Iliac Vein
Sural V	T-4942D,SRT,Gastrocnemius vein
Saph V	T-49530,SRT,Great Saphenous Vein

MODALITY Label	*DICOM Mapping*
SSV	T-49550,SRT,Lesser Saphenous Vein
Peroneal V	T-49650,SRT,Peroneal Vein
Pop V	T-49640,SRT,Popliteal Vein
P.Tib V	T-49620,SRT,Posterior Tibial Vein
PFV	T-49660,SRT,Profunda Femoris Vein
Soleal V	G-036B,SRT,Soleal vein
SFV	G-035A,SRT,Superficial Femoral Vein
IIV	T-48940,SRT,Internal iliac vein
Femoral V	T-49410,SRT,Femoral vein
TP Trunk V	V12110-01,MRUS,TP Trunk Vein

Abdominal Arteries (unilateral)

MODALITY Label	*DICOM Mapping*
Abdominal Aorta	T-42000,SRT,Aorta
Celiac Axis	T-46400,SRT,Celiac Axis
C Hepatic A	T-46421,SRT,Common Hepatic Artery
Hepatic A	T-46422,SRT,Proper Hepatic Artery
Splenic A	T-46460,SRT,Splenic Artery
SMA	T-46510,SRT,Superior Mesenteric Artery
IMA	T-46520, SRT,Inferior Mesenteric Artery

Abdominal Veins (unilateral)

MODALITY Label	*DICOM Mapping*
Hepatic V	T-48720,SRT,Hepatic Vein
Left Hepatic V	T-48727,SRT,Left Hepatic Vein
Right Hepatic V	T-48725,SRT,Right Hepatic Vein
M Hepatic V	T-48726,SRT,Middle Hepatic Vein
Portal V	T-48810,SRT,Portal Vein
IVC	T-48710,SRT,Inferior Vena Cava
Splenic V	T-48890,SRT,Splenic Vein
SMV	T-48840,SRT,Superior Mesenteric Vein
M Portal V	V12114-01,MRUS,Main Portal Vein
IMV	T-48910,SRT,Inferior Mesenteric Vein

Renal Vessels

MODALITY Label	*DICOM Mapping*
Ren A Org	T-46600,SRT,Renal Artery
Renal A	T-46600,SRT,Renal Artery
Renal V	T-48740,SRT,Renal Vein
Segment A	T-46659, SRT, Segmental Artery
Arcuate A	T-4668A, SRT, Arcuate Artery of the Kidney
Interlobar A	T-4667D, SRT, Interlobar Artery of Kidney
M Renal A	V12115-01, MRUS, Main Renal Artery